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DOMINION DENTAL JOURNAL

(Official Organ of all Dental Associations in Canada)

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TORONTO, CANADA

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Dominion Dental Journal

Vol. XL

TORONTO, JANUARY, 1928

No. 1

ORIGINAL COMMUNICATIONS

Surgical Treatment of Periodontoclasia*

MURRAY L. DYMENT, D.D.S.

During the last decade rapid progress has marked the onward march of Dental Science, and in its wake much light has been shed on the subject of Periodontology. Leading research workers in this field have made a thorough study of the Histopathology of the disease, classified the various lesions involved, and have described local predisposing and exciting causes related to it. One only need mention the brilliant and original works of such men as Drs. Gottlieb and Fleishman of Vienna, Harold K. Box of Toronto, Arthur D. Black and the late G. V. Black of Chicago as outstanding scientific investigators of our time.

It is a well known fact that scientific knowledge in itself, though based upon the most rational findings, borders closely to failure when not backed up by empiricism. Essential as it was to Dentistry to have this

fundamental knowledge in order to broaden our concept of the subject, nevertheless to-day and for many years in the past the profession has been handicapped by the lack of a definite technique for this work. This is most essential to the average operator, or even to the aspiring periodontist who aims to get any uniformity of results.

Too many of our enthusiasts have become addicted either to faddism on the one hand or bigotry on the other. The writer has worked incessantly for two years in devotion to the study of Periodontoclasia, and feels equally with other fellow practitioners the need of a simple systematized technique for the eradication of the Pus Pocket. The purpose of this article is not to provoke any prolixed discussion about Etiology, Diet, or various factors considered possibly secondary to a main cause; nor is the

*A report, a discussion, a review of a course in periodontoclasia given at the North Western Dental School, Chicago, Ill. The author makes no claim to originality but hopes only to express the views, teachings and arguments as gathered from the course.

intention to minimize the importance of Mal-Occlusion, Open contacts, etc., points which will be considered (infra).

A resume of treatments in the past and present include cautery of Pus Pockets, Use of antiseptic drugs, Ionization, Vaccines, Violet-Ray and Electric Therapy Surgical, Prophylaxis and curettage of the diseased processes in the pocket, with a view to re-attachment. Various schools have adopted different techniques. Teachers have often become too dogmatic and unwavering in their convictions as to the efficacy of their techniques. To my mind a co-operative rather than an antagonistic attitude should be adopted by the profession. There can be strength only in unity. To be exact, surgical pyorrhea has been unduly condemned by many periodontists who believe in re-attachment solely. The writer is inclined to take a conservative view. It seems erroneous to condemn all surgical methods and assert that all cases are a uniform success by re-attachment. For example, broad and shallow pockets are not equally as favorable for re-attachment as long and narrow pockets. Each technique surely has its limitations and possibilities. There are innumerable cases where surgery is best indicated. It is simple in technique, inexpensive to the patient, and effective. Uniform results are obtained, for this method eliminates the very last vestige of necrotic tissue and necrosed bone, usually at the one sitting. Again where access in many cases is otherwise impossible, the cutting away of the pocket makes the field of operation clear. Hospital patients whose health is low, suffering possibly of Arthritis, Endocarditis, as well as other localized foci, where immediate relief is sought, the treatment not to extend over any length of time. Cases of Hypertrophied gum. There is also less danger of scraping too much of the cementum in an effort to get a smooth cementum in a

dark field when attempting to re-attach the soft tissue to it.

Definition and Scope of the Surgical

Treatment of Pyorrhea

Surgical Periodontoclasia is the partial or the entire eradication of Pus Pockets by cutting away gum tissue that is undermined by the disease of the Peridental Membrane. This should be cut away as far as the greatest depth of the pocket, which generally requires the cutting away of the margin of the Alveolar Process as well as the soft tissue, since detachment of Peridental Membrane from cementum is usually in advance of destruction of bone.

Structures concerned in the formation of the pyorrhea pocket.

Drawing 1. Illustrates groups of fibres of the Gingivae and Peridental Membrane. A bucco-lingual section through a Bicuspid tooth and investing tissue.

- F. Free gingival group of fibre.
- Ac. Alveolar crest group of fibre.
- H. Horizontal group of fibre.
- O. Oblique group of fibre.
- A. Apical group of fibre.
- B. Bone of Alveolar process.

Drawing 2. — Longitudinal Bucco-Lingual section through root of tooth and gingival portion of investing tissue showing fibres of the Peridental Membrane.

Note—E. Epithelium which quite thick.

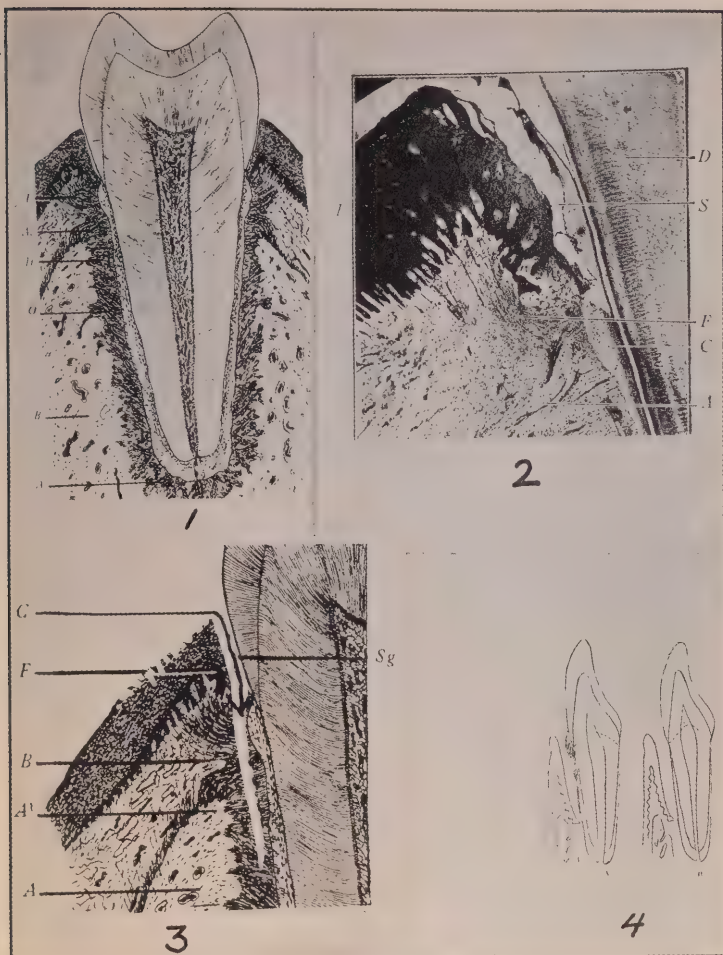
- S. Subgingival space.
- D. Dentine.
- C. Cementum.

Drawing 3. Longitudinal section, showing a long narrow pocket extending into Alveolar process.

Note C. Where gingivae are detached.

- B. Calculus.
- F. Gingivae breaking down.
- AP. Alveolar Process.

Drawing 4a and B. Illustrate very simply the formation of a pocket where all peridental fibres have practically been destroyed.



As will be seen from diagrams 3 and 4 the pocket is the result of detachment of Peridental Fibres. Note the Calculus and untreated Cementum in Drawing 4a.

The blood supply is plentiful. The blood vessels normally in the Peridental-Membrane run parallel to the long axis of the root.

3 Sources

a. Branches entering through apical area.

b. Branches entering laterally through the Haversian Canals.

c. Branches entering in the form of loops at the Gingivae.

Lymphatics have been demonstrated by Frederick B. Noyes and K. W. Dewey of Chicago. They act as a drainage for the connective tissue to carry off the waste-products of metabolism.

Cementum a Very Important Tissue

Arthur D. Black asserts that

"Chronic infections about the teeth present a problem in local pathology entirely different from the problem in any other body focus, because of the peculiar structure of one of the tooth tissues—the cementum which constitutes the outer surface of the root, and furnishes attachment for those connective tissue fibres which hold the tooth in its socket. It is laid down by the cementoblasts of the Peridental membrane.—It is characterized by lack of circulation. Cementum is a passive tissue dependent on the peridental membrane for its vitality. It therefore dies when denuded of its Peridental Membrane as does subperiosteal bone when stripped of its periosteum. The dead area of cementum cannot be separated and exfoliated, as is dead bone; therefore the dead area of cementum remains and acts as a continuous irritant to the adjacent tissue. Thus the peculiar structure and physiologic relationships of the cementum are responsible for maintaining the chronicity of the infections about the teeth. Black states further that cementum is a very porous tissue, and naturally absorbs the products of the suppurative processes with which its surface is bathed. 'It should not be expected therefore that a *re-attachment of tissue to dead cementum will occur*'."

"Steps in the Development of the Pus Pocket."

1. Lowered resistance in the gingivae—a. local. b. constitutional. Conditions, etc.

2. Infection of the gingivae.

3. Carrying of infection by way of lymphatics into peridental membrane.

4. Break in peridental membrane leaving short ends of fibres attached to cementum and the remaining short ends of fibres attached to the alveolar process. (See drawing 3).

5. Destruction of short ends of fibres attached to the cementum, also of cementoblasts and consequent death of cementum. Drawing 4a.

6. Cementum becomes pus soaked.

7. Disappearance of outer ends of fibres and corresponding area of bone.

8. Pocket lined with connective tissue is partly protected by Epithelium.

The Operation

History and Scope—Resection of the gingivae was begun at the Northwestern University in 1911. No extravagant claims have ever been made and its sponsors recommend it as a most efficient control method for putting the tissues in such a condition that they cannot be re-infected, being left in such a condition that they are almost self cleansing. It is a method of reducing the depth of pockets by eliminating the tissue surrounding them.

a. Cases in which this operation may be employed are divided into three groups:

1. Those in which there are pockets on labial and lingual surfaces.

2. Those in which there are pockets on proximal surfaces.

3. Those in which there are pockets that entirely surround a considerable number—possibly all of the teeth, and are likely to be of tolerably even depth.

Most favorable localities to operate on, in order of merit, are:

1. Lower Anteriors most favorable.

2. Lower Posteriors.

3. Upper Posteriors.

4. Upper Anteriors least favorable.

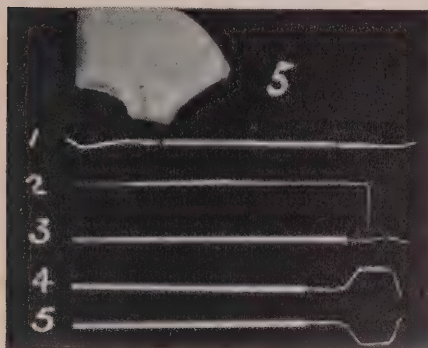
Broader and shallower palates respond less successfully than longer and deeper palates because of difficulty of control and esthetic reasons.

Procedure—of class 3 type.

Prophylaxis and palliative treatment should always receive first consideration. Inflammatory conditions of the mucous membrane should be looked after, particularly if acute.

Illustration No. 5—A set of instruments particularly suitable for the operation consists of: Periodontal probes for measuring depth of pocket (1 Black's Peridental Membrane Ex-

plorer, 2 H. K. Box's); Probes. 3. Black's Bi bevel chisel for curretting the bone; 4 and 5; two Merrifield Gum Knives for resecting the gin-



givae (made by Mason & Company, Chicago); Medicated wax — applied after completing the operation. (Borated Bee's Wax or Prinz's Compound).

Illustration No. 6 (Black's Special Dental Pathology).

Fig. 288-D. This represents four pockets on the labial of the lower Incisors. A Peridental membrane explorer may be passed into each of these pockets separately as far as the indicated destruction of the bone.

Fig. 288E. Shows technique of the operation where the four lower Incisors are involved. An incision is made through the labial gum eliminating all four pockets. Since the detachment of the peridental membrane from the root is always a little in advance of the destruction of the overlying bone, it is necessary to trim a little off from the edge of the bone to entirely eliminate the pocket. The method of doing this is illustrated in figure 7 No. 289F. Note the chisel in the interproximal space on the left side of the tooth, and the large fissure bur on the other. Either can be used. In some cases it is also necessary to trim off a little of the bone to the labial of each interproximal space. In this particular case the interproximal septal tissue is not cut away.

Illustration No. 7—Fig. 289C. A mesial view of the first molar before the operation. The interproximal soft tissue and bone are destroyed to such an extent that a concavity exists between the buccal and lingual plates of the bone.

Fig. 289D—The two lines indicate the position of the incisions just opposite the interproximal space. The blade of the knife is passed along the crest of the process.

Illustration No. 7. Fig. 289E—After the buccal and lingual incisions are made, all of the soft tissue down to the bone is removed from the interproximal space, usually with chisels.

(Granulation tissue is forced out by means of gauze tapered in the form of a cone and forced through the interproximal space with the chisel.)

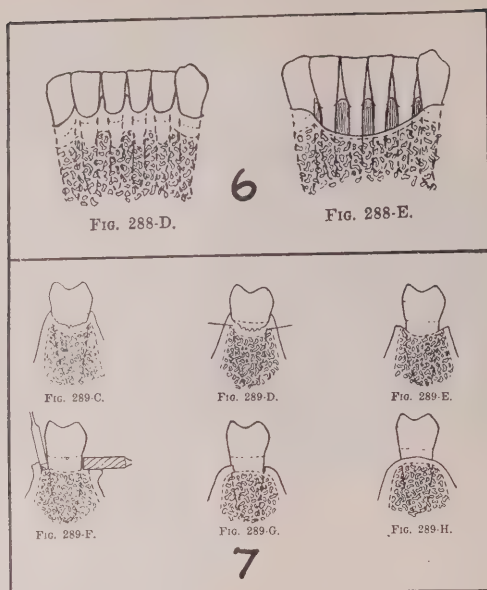
Fig. 289F—The buccal and lingual plates of bone are cut away, either with a chisel (left) or a large fissure bur (right), the end blades of which have been ground off so that the end may rest against the root without injuring it. It will be noticed that the bone is cut to a lower level than the overlying soft tissue.

Fig. 289G—A chisel is next used to trim the bone in the interproximal space, making it slightly convex from buccal to lingual. The edges of the gum tissue will usually lap over this bone, and the space between will be filled with a blood clot, which will promote the building of soft tissue over the interproximal bone.

Fig. 289H—Sketch of the interproximal tissue after the case is fully healed. The pocket is entirely eliminated and the interproximal bone is covered with healthy tissue.

Illustration 8 shows finger rest position in operating. Note the gum knife on the lingual of a lower right third molar in a. The use of a chisel in b. and d. on the labial aspect.

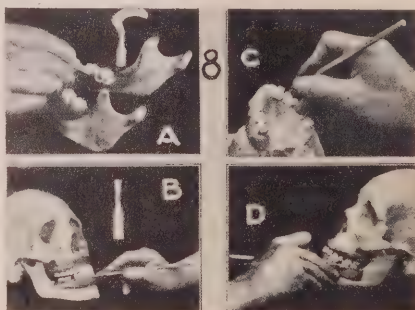
Routine technique—Always chart the case beforehand. Note the depth



of pockets, the number of teeth to be included in the operation. Usually no more than six are attempted at the one sitting. Two weeks later six others may be operated on. A piece of clean gauze should cover the patient's hair, similarly as that used by a surgeon. Assuming that a similar case as illustrated in Fig. 6 has to be operated upon—infiltrate the lower tissues carefully, by reflecting the muco-buccal fold and allowing the point of the needle to penetrate the tissue gradually. Use plenty of anesthetic. With a peridental membrane explorer puncture the gingivae at the level of the base of each pocket. Make an incision through the labial gum tissue from cuspid to cuspid as in Illustration No. 6, Fig. 288E. This incision should be curved and should at its deepest point be on a level with the deepest pocket. This cut should be carried down to the crest of the Alveolar process and below any

portions of the process which projects crownwise of the line of incision. The edge of the bone should now be trimmed away with Black's bin angle small chisel. See illustrations 289C-H. Fig. 7, and follow descriptions.

After all the granulation tissue is removed, and the bone curetted properly with the chisel to a level just below the cut part of the gingivae, and the calculus removed, the interproximal spaces are washed out with saline dried, gauze is packed in

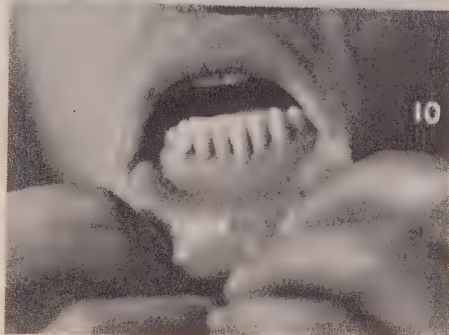


tightly and allowed to remain for about five minutes to get clotting. Remove gauze. Heat the medicated wax in water until quite soft, work it in the finger to a rope and very gently cover the cut surface of the gums, use lateral pressure not downward pressure, the object being not to force the tender gum in an apical direction. Dismiss patient for 48 hours.

Post operative treatments—remove the wax—wash with saline.

If any granulation or loose tissue is present remove with Pyrozone Solution using gauze very gently between the inter-proximal spaces. An eye Shear is an invaluable aid for cutting loose bits of gum. The experience usually is that the patient complains very little at this time of any pain. It is claimed that the cementum contrary to common belief is not sensitive since planing and shaving were done in an open field avoided thinning and scratching as is very often the case when attempting to cleave the last vestige of necrotic cementum at a considerable depth in the pocket. Patient should be seen at intervals of two days for about a week or so. Then once in two or three weeks until healing has properly taken place. Healing is quite rapid. The gum takes on a fair tone in about three weeks. The patient should be instructed about the care of his mouth. A bulb syringe is an invaluable aid to the patient to spray the interproximal spaces with. We cannot place enough emphasis on the importance of proper brushing, as upon its conscientious practice depends the success or failure of the cases. As soon as the gums permit, proper brushing must be started at

once. Charter's or McCall Stillman Method serve equally well. The operator must always bear in mind all factors that must be adjusted in addition. Teeth must be restored to function. Contact points must be built where needed or else strengthened and redeveloped. Occlusion must receive primary consideration as a predisposing factor to 'Rarefying Pericementitis Fibrosa.' Wandering and fan-shaped teeth should be



extracted as early as possible. This avoids abnormal rotation of teeth which would make restoration difficult. Minor detachments on any one surface of the teeth should always be treated by prophylaxis, grinding, scaling, polishing, etc. Congested conditions of the gingivae should be looked for as well as any inflammatory processes. Areas of gingivitis

should be noted. The stippling of the gums and other diagnostic signs must be carefully noted with a magnifying lens and recorded.

Prognosis can be based largely upon personal family history, the amount of bony structure lost in relation to the length of the roots. Cases where more than half the amount of alveolar process has been lost are less favourable.

Illustrations 9 and 10 show a case in point.

Figure 9 shows case prior to operation:

Patient 22 years old. Complained of indigestion, headaches, and exhaustion for some three years past. Pus was always present in the mouth and was not relieved by prophylaxis and scaling of the teeth and bone. The clinical picture was that of periodontitis Complex involving the four lower Anterior Teeth. Depth of pockets on centrals 6 mm.—on laterals 5 mm. Mobility very marked. Occlusion had been ground and adjusted by a practitioner. Teeth were recommended for extraction. The gums showed lack of tone, were quite soggy, stippled, recessions measured some 3—4 mm. on the average below the amelo cemental junction.

Illustration 10 shows results four weeks after the operation. The tone was improved from a bluish red to a pale pink. Nowhere is there any evidence of unhealthy bone.

Conclusion: As stated early in the paper the advantages of Pyorrhea surgery over other methods are many. As focal infection is considered the cause of many systemic disorders, the dental profession must shoulder its share of responsibilities. It, therefore, becomes incumbent upon us to take all measures necessary to practice a thorough elimination of any existing pathology in our field. The few periodontists cannot possibly treat

the thousands of cases met with by the general practitioner. The surgical method seems to be the most rational method of insuring complete eradication of the infected tissue and offering a minimum chance of recurrence. It is a definite control method. This method can rapidly be performed upon the entire mouth at one sitting if necessary, an advantage of great importance where health is impaired, as before a major operation and time is precious. It places this treatment on par with methods employed by surgeons treating infections in other parts of the body.

In place of leaving a diseased curtain of tissue covering the destroyed alveolar process, there is a new growth of healthy gum lying firmly over healthy bone. The gum in a very short time presents a normal physiological appearance as to color, contour and texture. Unless a more simplified technique for eradication of pockets is presented, the average practitioner must content himself with a more radical method which can easily be handled and render this important service to the needy patient.

MURRAY L. DYMENT, D.D.S.,

600 Bay St. Toronto.

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The Physicians', the Dentists' and the Public's Responsibility in Dental Caries, Focal Infection and Oral Sepsis

A. E. WEBSTER, D.D.S., M.C.D.S., M.D., F.A.C.D.

Interferences with the development of teeth.

(A) Diet.

Pickerel showed marked differences between the smooth surfaces of enamel in native and civilized races.

Mellanby observed both enamel and dentine to be defective in structure in civilized races as well as in the teeth of dogs fed on a ricketic diet. There were also much wider fissures in teeth of rickety dogs.

Sir Frank Collyer found that of 20% of wild monkeys' teeth which were decayed had cavities in the occlusal surfaces, while 80% of captive monkeys' teeth had occlusal cavities, thus it would appear that there are more defects in captive monkeys' teeth than in those native born or defects have nothing to do with decay.

While we know the pathology or the process of dental caries, we do not know just what factors bring it about. We do not know that defects of structure play a large part and that diet or environment a still more important part.

It is just here that the physician comes in. It falls to his lot to guide expectant mothers safely through the period of gestation and parturition. For many it is an anxious time. Often there is to be a choice between mother and child. This can be no better exemplified than in the diets recommended for the normal pregnant woman. Whether a birth can be made easy by insufficient calcium

phosphates, iodine and vitamins or not it is certain that teeth can be made defective by such diets. Mellanby, McCollum, Pickerel, Howe.

Nutrition and Diet in Health, by Fitch, 1918

The craving for sweets in the adolescent is a normal one. Generations back sugar was supposed to cause tooth decay. Theory exploded and toothbrush has robbed it of any dangers.

The theory that the pregnant woman should eat foods containing organic salts to produce bone in the infant has been exploded generations ago. The theory that an easy birth can be induced by the mother avoiding foods containing phosphates lime, is also exploded. But it is admitted that the size of the child can be reduced and thus reduce dangers of child birth.

Watson recommends a diet during the last three months low in calcium phosphate and carbohydrates to insure an easy birth.

Diet in Health and Disease, 1925.

By Friedenwald & John Ruhak.

The diet of women pregnant should contain vitamin A and an abundance of calcium and phosphate containing foods, so as to not have the bones and teeth robbed of calcium.

The physician who has been in the habit of withholding animal fats, fish, green vegetables, milk, butter, sunlight and salts from pregnant women to make an easy birth

is committing a crime against the child.

(B) **Acute Infectious Diseases** associated with high temperatures and especially those with skin manifestations.

e.g. Syphilis, measles, scarlet fever, & etc.

Hypoplasia, Atrophy of teeth, chiefly defects in dentine.

Notwithstanding the opinion of the high authority just quoted, there is a well grounded conviction among dentists that an excess of a carbohydrate diet will in some way induce dental caries. Every observing dentist has seen it, besides this, Sim Wallace convinced himself and others of the fact by feeding a number of school boys on a low carbohydrate diet, while their companions had a high carbohydrate diet. If the facts are as stated, then the physician's responsibility for the prevention and treatment of dental caries is no insignificant one. When

he sees the child become the adult of a woman who was fed on slops and a rachetic diet to make soft bones and an abundance of nurse, first with decaying teeth, then pulpitis oral sepsis and finally focal infection with all its consequences he must think of his share in it all. He must not forget either that the kind of diet that makes defective teeth makes defective bones and consequently irregularities of jaws and teeth. Mellanby. Sir Arthur Keith.

What Can the Dentist Do?

The teeth are all made before he sees the child, except possibly the 3rd molars.

He can—

1. Teach it to masticate.
2. Teach it oral hygiene.
3. Give regular oral prophylactic treatments.
4. Medicate and repair defects.
5. Insert fillings.
6. Establish and maintain normal occlusion.

Edmund C. Kells

St. Thomas, Nov. 28, 1927.

Dear Doctor Webster:

I received a letter from Dr. Charles Crouch, Miami, Florida, asking me to do my bit in promoting the interest of the "C. Edmund Kells Dental Chautauqua," which they are about to organize.

No doubt the Dentists of Canada will be pleased to learn of the formation of such a memorial to Dr. Kells, as his teachings are so widely

known, and appreciated in this country.

We trust those who are back of such an endeavor, will have the utmost success, to perpetuate the name of such an eminent man in our profession.

Possibly there are men in Toronto who are well qualified to give them assistance.

(Why Toronto alone, Editor).

Yours very truly,

T. C. Trigger.

Brief Summary of the Aims and Purposes of the C. Edmund Kells Dental Chautauqua

To forever honor and immortalize the name of one of the most outstanding figures in the dental world, and to perpetuate the wholesome ideas which he organized, let us join together as of one mind and one purpose, to erect a living monument of service to humanity at large, and dentistry in particular, as a tribute to our own beloved "EDDIE KELLS."

To cherish, revere, idolize and love that great man, is not of itself sufficient to bring into reality the aims and ideas of Eddie Kells. He has devoted his life and fortune, his consummate knowledge and skill, his every thought, energy and desire, and finally his whole physical well-being, to the advancement of dentistry. Few, if any men, have contributed as much to the dental profession, as has this erudite, unselfish, thoroughly human man, and though we eulogize him with "the tongues of men and angels," we shall never be able to repay him for the real good he has accomplished for us, nor for the real scientific contributions he has so generously placed at our disposal. Though still with us, we may at any time look for him to pass on into worlds of greater achievement. Before he does leave us, what could be a more fitting token of our love and gratitude, than the establishment in his honor, of a Mammoth Dental Chautauqua, named after him,—a Chautauqua, such as our Eddie has long pictured in his mind,—a Chautauqua consecrated to the purpose of carrying on the great work of him whose name it bears, so that he may complete his

life span, knowing that his labor was not in vain.

The many friends who know Dr. Kells personally, as well as the unnumbered thousands who have learned to respect and love him from his writings, will be happy to know that such a commendable and utilitarian memorial as the

C. EDMUND KELLS DENTAL CHAUTAUQUA

has been conceived, formed and promulgated at this meeting in order to inform and assure this great "Young" old man of dentistry, of the true love and appreciation that the dentists of America, have and always will have, for him.

The C. Edmund Kells Dental Chautauqua will be devoted to the advancement and improvement of dentistry as a science for the benefit of the people, and having for its cardinal principle the doctrine of dental righteousness. This organization will offer its benefits to all alert enough to take advantage of them. It plans to include training schools for dental hygienists and dental technicians, and there are to be post-graduate courses of instruction in all branches of dentistry. Stars of the first magnitude, eminently qualified in their respective fields, will teach the mechanics of dentistry in all its intricate ramifications.

Root canal work, porcelain dental art, cavity preparation, the making of matrices, porcelain jacket crowns, enameling and baking; all these and more will be fully explained and exemplified, and the work done by the dentists themselves.

Gold foil filling, cast gold inlay, amalgam filling, and all forms of artificial dentures will be taught by experts.

These courses will not be limited to a certain length. Each dentist may remain with one expert until he is proficient. "Learn By Doing" will be the slogan of the C. Edmund Kells Dental Chautauqua. The Chautauqua will first of all impress upon the minds of its students and graduates the importance of dentistry as a science; it will point out the duties and responsibilities of the office of D. D. S., and place in his head, heart and hands the knowledge, skill and sympathy which will bring to him supreme satisfaction and success through efficient and understanding dental service to his patients.

The C. Edmund Kells Dental Chautauqua will embrace the operation of dental clinics in schools and workshops; the teaching of general dental hygienics to school children and to the public, in co-operation with boards of education, boards of health, and civic service centers.

In each community where the Chautauqua is to be held, one week will be set aside and dedicated as "Dental Health Week," during which week illustrated lectures will be delivered to the public, and educational dental moving pictures shown, to impress upon the minds of the people the urgent necessity of properly caring for their teeth, and visiting their dentists often, in order

to preserve perfect health and physical harmony.

Literature, easily understood by the lay mind, will be distributed to all the people in the various communities, and the Chautauqua Clinic will give dental service to the worthy poor, when needed.

The Chautauqua will be held at Miami, Florida, during the three coldest months of the year, where it will be under the wing of the University of Miami. During the remainder of the year it will be held in many different places and parts of the United States, so as to make it possible for all dentists, rich and poor alike, to attend the Chautauqua and receive such post graduate courses as will help them to perfect themselves in every branch of modern dentistry.

In this way it is hoped that the life and works of the illustrious Dr. C. Edmund Kells, will continue to be manifested in such a concrete, practical manner, that all may freely receive the benefits, that he himself, so faithfully labored to confer upon mankind.

Respectfully submitted,

CHAS. I. CROUCH.

Miami Dental Clinic, Inc., Grapeland Trail Arcade Bldg., Miami, Florida.

Professor Warnekos says in families where cleft palate and hare lip are found there will be found a tendency to the development of supernumerary teeth.

Oral Sepsis

FROM SLEADMAN'S RECENT BOOK ON PYORRHEA

SYSTEMIC COMPLICATIONS

Much attention has been given of recent years to the problem, indeed a difficult one, of the effect of oral sepsis upon the general health of the individual. There appear to be two main paths of infection. On the one hand, we have those cases in which there is a definite infection in some other part of the body where the organism has been conveyed by the blood-stream from the mouth to the secondary focus; and on the other hand, we have the infection by the swallowing of organisms.

INFECTION BY THE BLOOD-STREAM

We have definite and indisputable cases of arthritis where the infecting organism is conveyed in this manner from the teeth to the joints in exactly the same way that gonorrhoeal arthritis may follow upon gonorrhoea.

It seems probable that much of the ill-health, which is cleared up after the adequate treatment of the dental sepsis, is due to a low form of septicaemia in which the organisms cause no definite secondary focus until the part is damaged. An interesting case of this kind which came under my notice some years ago was as follows:

A powerfully built man, in apparently robust health, about forty years of age, was one day stepping off the kerbstone into the street when he suddenly became aware of a motor-bus bearing down rapidly upon him. He sprang sharply back on to the kerb and, in doing so, slightly strained his left knee. The injury was so slight that he thought very little about it and continued his usual occupation for that day. Three or four days later, however, he was admitted to Charing Cross Hospital, under the

care of the late Dr. Montague Murray, suffering from acute suppurative synovitis of his knee-joint. He was transferred to the surgical side and the leg was eventually amputated. The interesting point in this case, is whence had come the infection? At the time of the accident his leg was not knocked in any way; there was therefore no external injury. Dr. Montague Murray made a thorough examination of his whole body and could find no focus of infection. He then asked me to examine his mouth, whereupon the source of the infection was immediately evident. He had a very advanced pyorrhoea alveolaris; his mouth was in a filthy condition, with deep pockets streaming with pus all around his teeth. The explanation given by Dr. Murray was that the "strain" had injured some tissue cells in the immediate neighborhood of the joint and thus lowered their vitality and resistance to invasion by micro-organisms. Consequently, the micro-organisms floating in the blood-stream from his oral sepsis gained a foothold with the disastrous result that followed.

This case probably gives us the explanation of the occurrence of a number of obscure infections. Another case of this kind was that of a man who for apparently no reason developed pain and tenderness in the left ankle. His medical adviser, searching for the source of infection, discovered a large ulcer in the mouth, caused by the pressure of a denture. Removal of the denture led to the disappearance of the ulcer in the mouth simultaneously with the subsidence of the symptoms in the ankle joint. Apparently, the pain and tenderness in the ankle joint was due to infection

via the blood-stream from the ulcer in the mouth.

Every dental surgeon of experience has come across those cases of fibrositis vaguely described by the patient as "rheumatism", where there has been complete subsidence of the symptoms following the removal of septic teeth.

These cases are so numerous that there seems to be little doubt about the soundness of the explanation; but some observers have been unable to accept the hypothesis, and have demanded proof. This they have made praiseworthy endeavors to obtain by isolating the organism from the teeth and from the secondary focus of infection—such as the joints or from the blood—in the same way that the gonococcus has been isolated from joint complications of gonorrhoea. It must be confessed that many of these attempts have failed. For instance, in a person suffering undoubtedly from septicaemia in which organisms can be cultivated from the roots of the teeth, it would be interesting to be able to demonstrate these same organisms in the blood, but unfortunately this is an extremely difficult matter. On the other hand, we have had organisms isolated from the secondary focus which do not correspond with those isolated from the mouth. This failure to demonstrate the organism in many instances in a satisfactory manner by no means refutes the argument. It is generally admitted that infection via the blood-stream undoubtedly occurs, in spite of the difficulty in cultivating organisms from the blood. Even when a different organism is isolated from the secondary focus to that found in the mouth, it again by no means invalidates the argument that the mouth condition is primarily responsible. It seems likely that the explanation is in many cases not quite so simple as direct infection from one focus to the other. Oral sepsis may—and clinical evidence seems

strongly in favor of the argument that it does—in many instances play an indirect role. The toxæmic absorption from the mouth lowers the resistance of the body and allows an organism of low virulence to gain a foothold in the tissues which would otherwise put up a successful resistance. It is a question, as Dr. Colyer puts it, of "the seed and the soil". This effect of oral sepsis is undoubtedly of great importance; in fact, it is probably one of its most important consequences. A very good example of this effect is seen in those cases in young people with early tuberculosis which clears up upon adequate treatment of oral sepsis. The explanation in these cases is not that the tubercle bacillus is found at the apex of the teeth and conveyed thence to the lungs via the blood-stream. On the contrary, it is rare to cultivate the tubercle bacillus from the apex of a tooth. The correct explanation appears to be that the oral sepsis acts by breaking down the individual's resistance to the tubercle bacillus and that, upon its removal, the improved health of the individual allows him successfully to overcome his more dangerous enemy.

An interesting example of this preparation of the soil for the seed is shown in Pasteur's famous experiment with hens. He showed that feeding hens on material infected with the anthrax bacillus failed to produce anthrax; in fact, the hens had a complete immunity to the disease under normal conditions. But when a hen was kept for some time in a cold bath with the water covering one-third of its body, the bird quickly succumbed to the disease; the explanation being that the temperature of the hen's body—which is higher by the animal species which are susceptible to anthrax—confers immunity, but that when the temperature of the hen is lowered by an immersion of some hours in a bath of cold water, this natural immunity is

broken down. Pasteur completed the experiment by inoculating a hen and keeping it prisoner in the bath until it was obvious that the disease was in full progress. The hen was then taken out of the water, dried and wrapped in cotton wool and placed in a temperature of 107 Degrees F. (the temperature of a hen), whereupon the bird recovered completely.

It is interesting to speculate to what extent this breaking down of the resistance of the individual occurs. It seems highly probable that in many of those cases in which strong and apparently healthy individuals suddenly succumb to pneumonia, their resistance to the organism is lowered by oral sepsis. The prognosis in many diseases such as pneumonia and typhoid is undoubtedly much more serious in a patient suffering from oral sepsis than in one who has a healthy mouth. In the Great War it was remarkable how the prognosis in some of the worst wounds was affected by the septic condition or otherwise of the patient's mouth.

THE SWALLOWING OF INFECTED MATERIAL

There are cases in which there is a direct infection of the stomach, due to the organisms from the pus pockets surrounding the teeth, becoming mixed up with the saliva and swallowed either with the food or in the intervals between meals when saliva is constantly being swallowed.

The question as to whether the stomach can be infected in this way is still a matter of controversy. Dr. William Hunter, in his classical and epoch-making paper, says:—

“(1) There is a limit to the capacity even of the stomach to resist indefinitely for periods of years the continuous presence of pyogenic (pus forming) and other organisms derived from cario-necrotic conditions of the teeth.

“(2) Its powers of destroying such

organisms, although great, are never complete even in health, and are solely due to the presence of free HCl.

“(3) Its powers of destroying such organisms become progressively weakened when, through any cause, an increase of continuous supply of pus organisms is associated with a diminished and continually lessening acidity of the gastric juice.

“(4) These two conditions are precisely those produced by chronic cario-necrosis of the teeth.

“(5) In time, the catarrh of the stomach, so commonly a sequel of imperfect dentition—possibly of simply irritant nature to begin with, the result of fermentation—becomes septic in its character—becomes really a septic gastric catarrh.

“(6) Eventually it may even lead to the deeper-seated changes which always result from chronic catarrh, viz., atrophy of secreting structures, with increase of fibrous tissue (chronic gastritis with atrophy of the glands).”

On the other hand, it is denied by some that the swallowing of pus from the mouth can affect the stomach mucosa at all, because the hydrochloric acid present in the stomach is supposed to kill the bacteria. Again, it is stated by others that the saliva which is being constantly swallowed is always swarming with bacteria even in persons with comparatively healthy mouths and that, consequently, the stomach mucosa has become so accustomed to dealing with these organisms that a few more or less make very little, if any, difference. It seems to have been forgotten by these observers that there is a period in the twenty-four hours, namely, in the early morning—when there is probably no hydrochloric acid in the stomach, yet infected saliva is swallowed during this time. But far more important than this is

the proved fact that hydrochloric acid, even when present in full strength—namely, just after meals—is frequently so dilute in the human stomach as to be entirely incapable of killing the large number of bacteria which may be present in infected saliva. Indeed, it seems that it is only capable of dealing with a few of the least resistant bacteria. It is now beyond dispute that typhoid and cholera are water-borne diseases.

INSANITY

There seems little reason to doubt that bacterial toxins acting on the nervous system are able in some cases to produce symptoms of actual insanity. In most text-books upon insanity, mental disorders are placed into two main groups: the organic and the functional. In the former, there is said to be some definite pathological changes in the brain tissue which give rise to the mental symptoms; while in the latter, no such pathological changes can be discovered. This led to the view that mental disease could occur independently of any change in the brain, a view with which Dr. Cotton—who has done much work upon this subject—totally disagrees.

Haldane has shown that because a cell looks normal under the microscope it is not necessarily normal in function.

Biologists tell us there can be no function without construction. Cotton points out that if this is true, it would also be true that there can be no abnormal function without a corresponding abnormal structure and he says that medical men have been willing to admit this fundamental law as far as it relates to other organs of the body, but that they have hesitated to accept it as applying to the brain and the mind. He states further that his investigations in certain types of insanity have shown conclusively that a disturbance of the anatomical structure of the brain accompanies the mental symptoms. This disturbance may be of transient character, so that

when it is removed the brain cells will return almost immediately to normal, but if the disturbance has been of a sufficiently virulent and lasting character, there may be a permanent alteration leading to a continuance of the mental symptoms. It seems highly probable that disturbances, such as slight microbial or other poisonous invasions of the body, which are transient in character, are not infrequently acting, and account for such temporary alterations in conduct as irritability of temper or slight forgetfulness, and so on.

Let us take as an example the action of alcohol upon the brain. When excessive alcohol is taken into the body it passes into the blood which, incidentally, nourishes the brain, and, according to the amount taken, mental symptoms develop, causing at first lessened function and later loss of function. Sir Frederick Mott recognizes four stages of the effects of alcohol.

In the first stage there is a brisk flow of ideas translated into speech and action, and associated with self-confidence; there is a diminution of self-criticism, deliberation and judgment or, where there is no external or internal exciting cause, it has a sedative effect and leads to drowsiness and sleep.

In the second stage there is a progressive falling-off of awareness in self-criticism which is manifested by fine sensory-motor disturbances, as exhibited in difficulties of articulate speech, diminished acuity and aesthetic sense of perceptions and more or less clumsiness in the execution of fine skilled movements.

The third stage of dissolution is characterized by a negative condition of the higher functions of the organ of mind. There is manifest evidence now of affection of lower levels, of coarse sensory-motor disorders, double vision motor inco-ordination, instability of gait and station; the reeling gait is doubtless due to affection of

the cerebellum, for a similar condition occurs in cerebellar disease. Speech is slurred, indistinct, incoherent and confused. On the emotional side the individual is either expansive and quarrelsome, or melancholic and maudlin.

In the fourth stage of dissolution there is a total dementia and stupor, with stertorous breathing and often incontinence of urine and faeces.

Gradually these conditions pass over into a state of deep sleep, after which the patient usually returns to the normal conditions. In some instances, however, when the quantity of alcohol taken is very large, the vital functions become so greatly affected that the patient may become comatose and die of failure of respiration.

If the alcohol accumulates in the system over a more or less prolonged period, the condition known as delirium tremens may be brought about described by Sir Frederick Mott as follows:—

"The premonitory signs of delirium tremens are disturbed sleep, restlessness, irritability, loss of desire for food, the patient eating nothing for days, only drinking. Then typical delirium develops suddenly, the motor restlessness is increased, and to this are added marked sensory disturbances. Of these, hallucinations are the most characteristic, numerous, and varied. The visual hallucinations are, usually fantastic, grotesque or horrible, more often the latter. Rats, spiders, beetles and creeping, crawling things are seen in the imagination; these hallucinations may rise from the toxic effects upon the sensory nerves of the skin, for various disturbances of the normal sensibility occur causing formication (crawling of ants), numbness, and pins and needles. These abnormal sensations derived from the skin may also cause various delusions of electricity of being on fire. Again, there may be delusions of devils, or of detectives pursuing him,

or of dead friends and coffins appearing. He hears voices accusing him, and he converses with imaginary persons, the subject of his utterances relating especially to his profession or occupation; thus the actor shouts his part, the publican is busy serving his customers, the drayman drives his horses. He is the subject of illusions, and the patient mentally transforms objects about him; figures on the wallpaper or the carpet, are converted mentally into creeping animals, or devils; specks on the bed-clothes may be taken for vermin which the patient tries to remove. There is marked fine tremor of the hands and face, also general muscular weakness and tremors. Tremor of the tongue is always present. At one time he will answer questions promptly and correctly, at another he is confused or his mind is distracted by the terrifying hallucinations. His disposition is changeable, at one time friendly and amiable, and at another irritable, angry and quarrelsome. The mood may cause rise of temperature, and the pulse is weak and of low tension. There is usually profuse sweating as a result of the restless motor activity.

"These symptoms last three or four days, then he passes into a sound sleep and recovers, or he enters into a typhoid condition with low muttering delirium and may die from exhaustion or some intercurrent disease."

We thus see what a profound effect a poison such as alcohol, even taken in comparatively small quantities and intermittently, has upon the nervous system. We know also that microbial toxins circulating in the blood have an equally profound effect upon the brain and, consequently, upon the conduct of the individual. We have the stage of delirium, in influenza or pneumonia, when the patient may suddenly become demented and throw himself out of a window. We have the acute delirium stage of many of the zymotic diseases. (Con't. Feb.)

Regulations Concerning Dental Specialists

AS ENACTED BY THE SENATE OF THE UNIVERSITY OF ALBERTA.

The following regulations regarding specialists in Dentistry are published under the authority of an Act to amend the Dental Association Act, assented to April 2, 1927.

The Dental Association Act Amendment Act, Section 2, states as follows:

2. The Dental Association Act, being chapter 204 of the Revised Statutes of Alberta, 1922 is amended by adding as Section 28, the following:

"28.—(1) No person shall advertise or hold himself out to the public as a specialist or as being specially qualified in any particular branch of dentistry or dental work, without having received from the Registrar of the University of Alberta a certificate of having complied with such conditions precedent as to qualification or fitness as may be prescribed by the Senate of the said University.

"(2) The said conditions may be based either upon the possession of certain diplomas or other professional qualifications or upon compliance with prescribed tests by way of examination or otherwise.

"(3) Any breach of this section shall be deemed to be unbecoming and improper conduct within the meaning of section 31 of this Act."

Pursuant to the authority conferred upon the Senate by the above, the Senate has enacted the following regulations:

1. The term "specialist" used in the said Act shall, for the purpose of these regulations, be defined as a graduate of a Dental School recognized by the Senate of the University of Alberta who, having complied with the educational requirements set forth hereunder, has been granted the right to practise in some special field of Dentistry in the Province of Alberta.

2. (a) Candidates shall, after graduation, have five years' general practice of Dentistry and, in addition, not less than one session, or its equivalent, of graduate work in a School of Dentistry recognized by the University of Alberta, during which time special attention shall have been given to the specialty sought and subjects allied thereto; and shall be required to show credit for attendance; further they shall pass such examinations as the Senate may prescribe.

(b) Candidates who have had after graduation a period of intensive study in a specialists' clinic or hospital service shall receive due consideration with respect to the length of time required in general practice under Section 2 (a) above; they shall, however, satisfy the other requirements of Section 2 (a) above.

3. Candidates who were licensed to practise in the Province of Alberta prior to the enactment of these regulations shall receive due consideration for the length of time of practice and for the experience obtained during that time in the specialty for which a certificate is sought.

4. (a) There shall be a special committee to be known as *The Committee on Specialists in Dentistry*, consisting of the following: the Dean of the Faculty of Medicine, the head of the Department of Pathology, the head of the Department or School of Dentistry, the senior instructor in Orthodontia, the senior instructor in Exodontia, the senior instructor in Periodontia, the senior instructor in Prosthetic Dentistry, the Registrar of the Alberta Dental Association, and such other members of the dental profession in the Province as may be appointed from time to time by the

Senate on the nomination of the President of the University.

(b) Such committee shall consider all applications for specialists' certificates and make their report thereon with their recommendations

in respect thereto to the Senate.

(c) Applications, accompanied by credentials, shall be sent to the Registrar of the University of Alberta, for consideration by the Committee on Specialists in Dentistry.

Pedodontia

Are Dentists justified in treating or filling every *fissured tooth for children under 18 years of age*.

I think dentists are justified in certain cases, but not in all, to fill every fissured tooth for children under 18 years of age. Dr. Hyatt says you should cut out the grooves and fissures of all molars and fill them as a preventive measure.

In some children between the ages of 12 to 16 years of age, caries of the rapid developing white type will be found. Up to this time the dentine may have been resistant to caries. Until this period of susceptibility has passed no permanent work can be depended upon to retain perfect margins. Such patients do not give their mouth the necessary home care. In a case like this I think all the fissures should be cut out just as narrow as you can. If you have small amalgam pluggers they can be filled with silver amalgam, or fill with a good cement. When the patient has reached the stage of adolescence and has learned to give the mouth reasonable care, that is when the disease is under control, then the cavities may be gradually filled with gold inlays.

Acids resulting from the excess of carbohydrates attack every pit and fissure, where there is no interference and the tooth is soon destroyed. If the prophylactic measure of cutting out

the pits and fissures is carried out there is not the same danger of the tooth being destroyed.

Especially in the permanent first molar, if the pits and fissures were cut out and filled, there would not be so many of them lost in early childhood from decay, as the child's oral hygiene is very often lacking when it is needed most.

PEDODONTIA

Give a systematic treatment of fissured first permanent *molars in children up to 12 years of age*.

If the finest explorer will catch in the fissures of a permanent first molar in children under 12 years old, excise the overhanging tissue at once. Polish the grooves and sulci with pumice until any deposit is removed, and then give a treatment of nitrate of silver (Howe's solution). Repeat this treatment in two to three days. If in a few days you find the patient's oral hygiene has not been carried on properly, or if there is some pathological condition, a farther prophylactic step should be taken.

Dry the tooth and cover the surface with thin cement, pressing it into all the grooves, but leave a smooth surface, so debris will not find lodgment.

Black copper cement used if there are not any pits showing caries, as the black cement would stain the dentine. If the dentine is exposed use oxy-phosphate of zinc cement.

SOCIETIES

The Toronto Dental Assistants' Association

CONSTITUTION

ARTICLE I.

The Association shall be known as "The Toronto Dental Assistants' Association."

ARTICLE II.—OBJECTS.

The promotion of unity and good feelings among the Dental Assistants of the city, and the advancement of the interest of the profession of Dental Nursing.

ARTICLE III.—MEMBERSHIP.

(a) The Association shall consist of one or more from the different bodies:

- (1) College.
- (2) Dentist's Office.
- (3) Public Health (Schools).

(c) Active members, those assisting in the dental offices or clinics for at least a year, and who are considered in good standing with the profession.

ARTICLE IV.—OFFICERS.

The Officers of the Association shall be a Past President, President, Vice-President, Treasurer, Recording Secretary and Corresponding Secretary.

These officers, together with conveners of committee and Board of Directors, shall constitute an Executive, who shall represent the Association and arrange its affairs.

The officers and members of the Executive shall be elected by ballot at the Annual Meeting and shall serve until their successors are elected.

No member shall hold the same office for more than two consecutive terms.

ARTICLE V.—DUTIES.

(a) The President shall preside at all meetings of the Association. She shall countersign all orders for the payment of monies, and may in case of vacancy, make all necessary appointments until the next regular meeting of the Association.

(b) The Vice-President shall preside at all meetings and discharge all the duties of the President in her absence.

(c) Recording Secretary shall keep a record of the proceedings of all meetings of the Association.

(d) Corresponding Secretary send out all notices relating to the Association.

(e) Treasurer take charge of all monies, collect all dues and pay only such bills as are countersigned by the President.

ARTICLE VI.

The Regular Annual Meeting of the Association shall be held early in June at such a time as the Board of Directors may appoint.

ARTICLE VII.

The Regular Meeting will be held once a month. (First Monday in each month, at 8 p.m.).

ARTICLE VIII.

The annual dues shall be \$2.00 payable at the annual meeting in June.

After the first year new members

will pay an initiation fee of \$1.00 with application.

ARTICLE IX.

Each member of the Association shall sign the constitution to signify her acceptance of the terms of membership and her willingness to be bound by its provisions.

ARTICLE X.

At any meeting of the Association five (5) members shall constitute a quorum, and three (3) members shall constitute a quorum of the Board of Directors.

ARTICLE XI.

This constitution may be altered or amended at any general meeting of the Association, or by any special meeting called for that purpose, provided notice of the change proposed be mailed each member of the Association at least ten days before said meetings.

BY-LAW I.

The order of business at meetings of the Association shall be as follows:

- (a) Reading of Minutes.
- (b) Reports of Officers.
- (c) Reports of Standing Committees.
- (d) Reports of Special Committees.
- (e) Unfinished Business.
- (f) New Business.
- (g) Adjournment.

COMMITTEES.

The Executive Committee shall consist of the officers of the Association and two members from each section.

There shall be:

- (a) Special Committee.
- (b) Convention Committee.
- (c) Sick Committee.

Dental Assistants' Association

A SKETCH OF THEIR DOINGS

For some time the graduate dental nurses had been functioning successfully in the form of their Alumnae. A need, however, was keenly felt for the broadening of that field to include the assistants already in dental offices. Several of these assistants approached a lady, Miss Gertrude Whitehead, whom they admired for her ability. She in her usual eagerness to be of service to the dental profession, arranged for a gathering of all interested assistants in June, 1927.

An association was thus formed, known as "The Toronto Dental Assistants' Association." Its object is the promotion of unity and good feeling among the dental assistants of this city, and the advancement of the interest of the profession of dental nursing.

Those eligible for membership are graduate dental nurses, those assisting in dental offices or clinics for at least one year.

The annual dues are \$2.00 with an initiation fee of \$1.00 after the first year.

The meetings are held the first Monday at 8 p.m. at Willard Hall, the use of which has been given gratis.

In the early fall, a Hard Times' Party was held, at which the girls became much better acquainted with one another. Small informal parties are to be held in the future to keep the feeling of good will well established.

At another meeting, Mr. Bert Whitehead gave a most instructive and helpful talk and demonstration on "The Care of the Handpiece."

A special gathering was held in December, when plans were laid for Christmas cheer. As a result, a real Christmas dinner was sent a family—parents and four children—plus enough supplies for a week. Warm clothing, sufficient to withstand the winter's chilly blast, for all the household, accompanied the baskets of food.

The girls certainly responded liberally and cheerfully to the call, and judging from the happy atmosphere thus created in that home, they are well repaid.

During the coming winter months the programme is scheduled for splendid lectures and clinics that will be of valuable aid to the assistants and thus to the doctors.

This organization is still in its infancy, but under the guidance of

its energetic president, Miss Alta Aitken, and her co-operative executive, it will blossom forth into an organization of its kind with which it is difficult to compete.

The officers are as follows:

President — Miss Alta Aitken,
D.N., Ran. 2664.

Vice Pres.—Miss E. Hagan.

Treasurer—Miss Jean Laing, D.N.

Corresponding Secretary— Miss Kathleen James, D.N., Tr. 4241W.

Record Secretary—Miss Evelyn White, D.N.

Social Committee Convenor—Miss Anna Lindsay, D.N.

Convenor Convention Committee—Miss Nellie Tuck.

Convenor Sick Committee—Mrs. Marion Edwards.

Publicity Agent — Edith W. Brown, D.N.

Mid-Winter Clinics, Banquet and Dance, Palm Room, MacDonald Hotel, Edmonton, January, 1928

In 1925, out-of-town Practitioners challenged the Edmonton Dentists to put on a series of helpful Clinics in ordinary dental difficulties. After thinking this over, we decided we could and would.

We chose as our time the last of January, and have passed up our January and February meetings to concentrate on this. We will put on a good variety of work, presented by Edmonton and neighboring dentists.

An afternoon will be devoted to practical Clinics. A Banquet—ladies invited—will be held in the Palm Room of the Macdonald Hotel, and the evening given over to dancing, a

full orchestra being in attendance.

We charge no fee; the only cost being for the Banquet tickets, possibly \$1.50 a plate; all other expenses being met out of surplus society funds.

Anyone who has been using some useful stunt, please let us know, for the little hints often smooth the way in dental practice.

We will give more detailed information concerning this meeting, combining profit and pleasure, and to which we invite every dentist in Northern Alberta.

(W. Scott Hamilton),
Secretary.

The Dental Society of Western Canada

The December meeting of the Edmonton Dental Society was held on the 6th. Dr. Harold Orr, specialist on skin diseases, gave an illustrated lecture on diseases of the mouth. He had a large number of lantern slides done in color, which brought out every point very clearly. He was well received and heartily thanked for his visit.

What might be almost termed an epidemic of acute ulcerative gingivitis or "Trench mouth" seems to be passing around Edmonton, cropping up in different ways among all classes. A resolution was passed at this meeting calling the attention of the Medical Health Officer to the condition and suggesting that more attention be given to places serving the populace with refreshments and food, pointing out the highly contagious nature of this disease.

A slightly different form will be given the meetings for the early part

of 1928. Some time ago, a sort of challenge was handed to the Edmonton men to put on a purely local convention in a small way with local clinicians for Edmonton and northern Alberta dentists. The work of preparing this mid-winter clinic, as it is termed, has been undertaken by Dr. Leslie McIntyre. Dr. W. Scott, Hamilton and Dr. Alex. Gemeroy. As expected the response to requests for clinicians has been generous. Dr. De Renzy of Calgary has been persuaded to act as chief clinician demonstrating obturator work in cleft palate cases. Clinics on all features of ordinary troubles encountered in general dental practice will be presented and the Edmonton men expect to break up the monotony of the winter months through this little convention. A banquet and informal dance will wind up the affair. Anyone wishing to attend will be entirely welcome and we are sure will be well repaid for the visit.

Ottawa Dental Society

The Ottawa Dental Society is extending an invitation to the Medical Profession to be their guests at a dinner at the Chateau Laurier on January 16th at 6.30 p.m.

I therefore take pleasure in requesting the pleasure of your company as my guest for this occasion.

An address on Focal Infection will be delivered by A. E. Webster, D.D.S., M.D., M.D.S., F.A.C.D. Prominent men of the professions have consented to discuss the papers.

If unable to be present for the dinner, try and be present for the interesting addresses following. An early reply will be appreciated.

Dominion Dental Council

The following have passed their Dominion Dental Council examination on the following subjects.

ANATOMY—Buffett, L. R.; Cragg, T. E.; Dewis, G. M.; Graves, J. H.; Hill, D. J.; Levinson, K. I.; Millar, F. L.; Miller, J. P.; MacLean, J. D.; Robson, J. W.; Sullivan, C. A.; Sutherland, G. D.; Zakus, P.

PATHOLOGY & BACTERIOLOGY—Adam, S. R.; Corlett, H. M.; Dewis, G. M.; Findlay, C. A.; Godsoe, W. H.; Gowda, Faust; Graves, J. H.; Leith, A.; Lesik, J. I.; Millar, J. P.; Powell, H. B.; Sutherland, G. D.; Tupper, J. A.

PHYSIOLOGY & HISTOLOGY—Cragg, T. E.; Leith, A.; Miller, F. L.; Oldfield, S. R.; Sutherland, G. D.

PHYSIOLOGY (only)—Langstroth, R. S.

HISTOLOGY (only)—Buffett, L. R.; Burskin, J. A.; Craig, M. L.; Graves, J. H.

ANAESTHETICS—Findlay, C. A.;

Graves, J. H.; Leith, A.; McBrien, J. M.; Powell, H. B.; Sutherland, G. D.

ORTHODONTIA JURISPRUDENCE AND ETHICS—Corlett, H. M.; Findley, C. A.; Graves, J. H.; Sutherland, G. D.

MATERIA MEDICA & THERAPEUTICS—Adam, S. R.; Dewis, G. M.; Graves, J. H.; Longstroth, R. S.; Miller, J. P.; McBrien, J. M.; Sutherland, G. D.; Tupper, J. A.; Washington, L. A.

PHYSICS, CHEMISTRY AND METALLURGY—Anderson, P. G.; Buffett, L. R.; Clark, H. E.; Cragg, T. E.; Graves, J. H.; Longstroth, R. S.; Miller, F. L.; McBrien, J. M.; Oldfield, S. R.; Robson, J. W.; Sullivan, C. A.; Sutherland, L. D.; Washington, L. A.; Zakus, P.

PHYSICS AND METALLURGY (only)—Adams, S. R.

MEDICINE, SURGERY & RADIOLOGY—Gowda, Faust; Lesik, J. I.; Sutherland, L. D.

Reports of School Dental Service

It is interesting to note the gradual improvement in school children's teeth as reported by school dentists. Mostly the percentage of children needing service in first reports runs as high as 95%, gradually the percentage falls until in some schools it is as low as 35%. One would judge from this that there is a remarkable improvement in the children's teeth from year to year. And so there is but it may not be all that it seems. If when a child is seen

for the first time at say, ten or eleven years of age and all first molars are extracted and perhaps several deciduous teeth as well, there are very few teeth left to decay and as a consequence the percentage of children requiring treatment will rapidly fall. The reduction of caries is largely because of the reduction of the number of teeth left to decay and the fact that recently erupted teeth have not yet had time to decay.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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Vol. XL

TORONTO, JANUARY, 1928

No. 1

Malpractice in Dentistry in Northern Canada

According to the Edmonton Journal a dentist went north last year to bring dental services to the Eskimo. It seems that the kind of service taken to the north was the making and applying of gold crowns to the anterior teeth. The equipment for doing such work was sold to a native who now plies his art for gain among his brethren. It is reported that good teeth are being ground off to apply these gold shells. If this report is false there ought to be a reply to such a slander on the dental profession; if it is true, then organized dentistry ought to see to it that no such malpractice be permitted. We presume such matters would fall within the Department of Health for the Dominion. The Dominion Dental Council or the Canadian Oral Hygiene Council might well look into all of these trips north to study Eskimo life and teeth. What right have unlicensed persons to go north and practice on the natives for gain? By whose authority should Eskimo Indians or other natives of the north be taught to practice a kind of dentistry that will do more harm than good? No person should be allowed to practice dentistry in districts under the control of the Dominion without authority from the Dominion. We direct the Dominion Dental Council to a duty and a responsibility.

Aid for the Worthy Dental Student and the Northern Parts of Ontario

There are many plans throughout the Christian world for aiding worthy students. Not all the plans are free from motives, some worthy, others not. The far-seeing statesman or the propagandist long years ago recognized educational institutions as best suited to promoting his views. The Rhodes Scholarships are examples of a far-seeing method of promoting the views of a statesman. There are many prizes, bursaries, scholarships, livings, etc., given to promote the study of this or that subject. On the other hand large gifts of money and property are given free of any strings for general education. In some universities there are large sums of money loaned to worthy students at the current rate of interest and other funds loaned without interest.

We are not so sure that philanthropists should ever give money for the endowment of private schools, colleges or universities. If the student or the state wants higher education then they should pay for it. But if a philanthropist wants to do a philanthropic act he can quite properly make a donation which will go directly to the benefit of some needy and worthy student. Endowments in the form of buildings, salaries, etc., help the rich as well as the poor, while donations given directly to indigent students hit the mark at once.

Money loaned to students at current rates of interest or without interest would seem to be all a good student should expect or accept. The worthy student needs only an opportunity, nothing more.

The British Dental Association has established a fund from which dental students may get assistance. Dalhousie University has a similar fund. For many years students have been assisted by the government in New Zealand. The plan followed there is similar to the one followed in the Educational Department in Ontario in regard to the education of teachers for backward districts. The prospective teacher receives one dollar a day during the period he or she attends the Normal School at North Bay, and to repay for this assistance they agree to teach for a certain number of years in the northern part of the province at a specified salary. We can not conceive of any form of philanthropy or agreement which compares with this for the general good of all who take part in it. The only possible objection we can see is the fact that the candidate cannot buy a release from the agreement.

These same unorganized districts of Ontario need dental services quite as much as they do education. We can see no good reason why the Ontario Legislature should not assist worthy dental students through college and in return they should serve in sparsely settled districts for a certain time at a certain salary. Dental education is among the most expensive courses at the university. In fact the cost is a barrier to many worthy young men and women.

Notes

Dr. Neil Clark of Lucan, Ontario, was married to Miss Birr on November 13th and was the recipient of a purse of gold given to him as a token of respect. Dr. Clark is leaving Lucan to take up practice in Detroit.

A one million, three hundred thousand medical and dental building will be erected in Vancouver within the coming year. It is stated by the architect that such a building will cost four per cent more than a similar sized office building.

A Chicago paper reports the value of hypnotism in dental operations. This subject has been dead for over twenty years.

Mr. Putnam, superintendent of Women's Institutes for Ontario, says that the health of the children in cities and towns is better than in rural districts. We would like to know how the facts for such a statement were collected and upon what the statement was based.

The truth about oral sepsis and its consequences on the alimentary canal is sufficient for the public without writing scare headlines about it.

It would seem that the Board of Education is unable financially to continue to do all the dentistry required in the schools of Calgary. A resolution was introduced to continue the inspection and notification of all classes but care for only those in the first VI grades. This resolution was defeated and an additional dentist employed so that all children will get what dentistry can be done with the present staff.

Odontoclasia a new dental disease discovered by doctors Simington and Jones, according to press reports. The new disease is a staining of the enamel which later softens and is easily scraped away or worn off with a brush. Nothing new about this except the manner of reporting it.

Drs. D. S. Cowan, Faskin, Cameron, Harwood, and Winthrop had a conference with the Saskatchewan legislative cabinet asking for a new Dental Act. The present act was passed in 1909 and is out of line with the new Universities now teaching dentistry in Canada.

A dental authority of Canada says there are not more than a dozen perfect sets of teeth in the Dominion. A dental mechanic says he has at least a half dozen of such sets in his laboratory.

A Bazaar under the auspices of the St. Vital Free Dental Clinic Auxiliary was opened in Norbury school when Hon. Dr. Montgomery congratulated the Committee on the success of their undertaking.

The Dental Nurses' Alumnae Association held its monthly meeting at the home of Miss Eva Tutt, Bloor street west. After the usual business an interesting report was given by Miss Welda Leask, who was sent as delegate to the American Dental Assistants' Convention in Detroit in October. A pleasing feature of the evening was a shower of food, clothing and money. The Alumnae is giving a family their entire Christmas dinner and cheer. Refreshments were served by the hostess, assisted by Miss Helen Rose.

Authoritative Dental Instruction for the Public

Editorial Note—We print the following from the Manitoba Free Press to show what can be done by co-operation with the press. Here are weekly articles given to the public from an authoritative source. Similarly prepared articles might appear in many parts of Canada. Many people will write to the Dental Health Department of a newspaper who would not consult with a dentist or the family doctor on such questions.

MOTHER'S FOREFINGER AS CHILD'S TOOTHBRUSH

HOW would you clean your child's mouth? How would you make its first tooth brush out of your forefinger? Why will an unclean mouth hold up the proper nursing of the child?

These are matters for every mother to know. Practised rightly they start the clear mouth habits after birth that carry right on through life. Give the child the best start, physically, it can have.

So the need is to understand what can be done to help it; then the job is to follow it through and overcome early conditions—that in many cases will prevent future mouth troubles.

For instance, an unclean mouth of a baby may infect the mucous membrane. Proper nursing is then held back. What needs to be done the first few months, so that this will not happen, is simple. Take some cotton or gauze and wrap it around the forefinger. Cotton is better because it is soft and doesn't cause any irritation. Soak with boric acid or ordinary salt solution. The salt solution is made by dissolving a teaspoonful of table salt in half glass of water.

Rub around the gums and mouth and get into all of the out-of-the-way spots, even under and alongside the tongue. In fact, the unhandy places to reach are the most important ones to get. Do this twice a day—morning and night.

Later on, start the child using its own toothbrush. One that is small in size and has soft bristles is best. Show it how to use the brush so that it will begin in the right way on this important life-long habit.

ACID OR ALKALINE DENTIFRICES

Tooth paste or powder on the brush does some good as a cleaner. Put the main hope on the brushing itself—for just as soap and water will clean, it takes rubbing together of the hands to make a thorough cleansing job.

The right dentifrice to use—dentifrice is just a high-brow name for any substance that cleans the teeth—is one that is just a good cleaner and doesn't scratch or mar the enamel of the teeth. It shouldn't try to be a cure-all, for a dentist and not a dentifrice is the one to fix up unhealthy mouth conditions.

There is nothing better than lime-water for an alkaline dentifrice. Its action is mild when much work needs to be done so that we advise fruit acids on occasion. These fruit acids help to prevent tartar from forming and also curdle the mucin plagues so that they roll off the teeth during brushing.

These acids are found in some dentifrices; also in grapejuice, orange juice, apples and vinegar. As most of the damage to the teeth is done during the night, such "acid" cleaning is important before retiring.

Have the advice of your dentist as to the condition of your teeth, especially as to whether there is any wearing away or destruction of the enamel before using acid or alkaline, smooth or gritty dentifrices exclusively.

Notes on Bacteriology for Dental Students

By F. ST. J. STEADMAN, D.P.H., L.R.C.P., LONDON. M.R.C.S., L.D.S., ENGLAND

Publishers, John Bale Sons & Danielsson Ltd., Oxford House, Oxford St. W., London, England.

This is a book of less than fifty pages with a few illustrations. It is not published as a text book on bacteriology but as a student's foundation

for a study of the subject. It is a splendid review book. Like a number of other books of notes on various medical and dental subjects published in England, it is adapted for candidates preparing for examinations. It might well have been called the essentials of Bacteriology.

Hare Lip and Cleft Palate

History etiology development, anatomy, physiology, types, surgical and non-surgical treatment and reported cases by Mathew N. Federspiel B.Sc.; D.D.S., M.D., F.A.E.S., F.A.E.D., Professor of oral surgery Marquette University, Oral surgeon, Milwaukee Hospital, Marquette Hospital, etc., with numerous illustrations. Publishers C. V. Mosby Company, St. Louis, 1927.

This is a very nicely gotten up book, well illustrated and covers

only the subjects mentioned in its name. It is not an oral surgery. It is simply what its heading indicates. The author gives as his reason for putting his views in book form that there are many failures which he thinks a surgeon trained in orthodontics and prosthodontics might avoid. The author disclaims any purpose of criticism of former writers but it appears otherwise in some parts. Fig. 19, is made to appear as if the teeth were made irregular by passing wires to close the palate.

Local Anaesthetics as a Cause of Death

In 1919 the American Medical Association took an active interest in the study of the advantages and disadvantages of the various local anaesthetics. The investigating committee have made three reports, 1920, 1921 and 1924. In their final report they compiled 43 deaths following the use of local anaesthetics 26 were caused by cocaine, 8 were

avoidable deaths caused by substituting cocaine for procaine. Four of the deaths were caused by butyn and four by apothesine. One by each of alypin and stovaine. There was no report on the frequency of the use of each. Novocaine (procaine) is used more frequently than any of the others yet it caused but one death.

Ontario Dental Association

Dr. Webster,
Editor Dominion Dental Journal,

The Ontario Dental Association is making an effort to secure a permanent membership. It is felt that organized dentistry could do far better work in this province with an Association of that kind than can be done with one in which the Convention is considered as the only worth-while feature. Dentists who pay a fee each year, whether they attend the Convention or not, will take a greater interest in the general affairs of the Association and will be more willing to make their contribution to the welfare of the profession.

It is the wish of the Board of Governors of the Ontario Dental Association that all agencies which help form opinion within the profession should co-operate with them in this effort, and consequently, I was instructed to write, asking you to assist by writing suitable editorials in your Journal. The Board of Governors will greatly appreciate your help in this endeavor and feel sure, that by so doing we are accomplishing something which will prove of great benefit to dentists.

With all best wishes, I remain,

Yours fraternally,

FRED J. CONBOY,

Secretary, Ont. Dental Association.

Dental Index

Dominion Dental Journal,
Dr. A. E. Webster, Editor,

We are sending under another cover by insured parcel post a Review Copy of the 1891-95 Index to Dental Periodical Literature and will appreciate your giving this work a review notice in an early number of your Journal. This is the sixth of the series of ten volumes comprising the set from 1839 to date.

The following are the volumes that have been completed: 1839-75 (completely sold out); 1876-85 (nearly sold out); 1886-90; 1891-95; 1911-15 and 1916-20.

Those in the course of preparation are for the years: 1896-1900; 1901-05; 1906-10 and 1921-25. The copy for the 1921-25 book is now in the printer's hands and we hope

to be able to make early delivery for it. Our success in this direction will be governed in a measure, at least, by the manner in which our subscribers respond in purchasing the present volume.

The price for the book remains at \$6.00 to points within the United States and Canada, and \$6.50 to all other points.

We are repeating our request of former years,—namely, that we be placed upon the complimentary mailing list of your Journal.

Thanking you for past favors and with every best wish from the Bureau to your Journal, I beg to remain,

Yours very truly,

A. HOFFMAN.

Secretary-Treasurer.

YOUNG GRADUATE DENTIST—Wanted at once. Ontario License. As assistant to orthodontist. Apply Box 54, Dominion Dental Journal.

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Report of Meeting of Delegates from All Canada

Delegates from the various provinces of Canada excepting Nova Scotia and Prince Edward Island met in Toronto during May, 1927, to reorganize the Canadian Dental Association. A revised constitution and by-laws were drafted.

The following representatives were present:—

T. R. Peden, representing British Columbia; A. Johnson, representing British Columbia; M. J. Gibson, representing Alberta; John Clay representing Alberta; W. P. Broderick, representing New Brunswick; Harry Thompson representing New Brunswick; F. O. Harwood representing Saskatchewan; F. J. Conboy, representing Ontario; Harold Clark representing Ontario; E. Charron representing Quebec; Philippe Hamel representing Quebec; D. P. Mowry representing Quebec; W. W. Wright representing Manitoba; C. H. Moore representing Manitoba.

Dr. Clay moves "That this board of delegates express regret that Nova Scotia and Prince Edward Island have been unable to send delegates to this meeting and hope that at a later time they will join us and approve of the result of our deliberations."

Dr. Thompson seconds the motion with the addition "That everything

must be submitted to the other provinces and their interests protected." Carried.

At the final meeting of the delegates May 17th Dr. Clay moved that the constitution be approved; seconded by Dr. Charron; moved by Dr. Harwood, seconded by Dr. Charron that the by-laws as drafted be approved.—Carried.

The constitution and by-laws to be published in three Canadian Dental Journals on the authority of Dr. Clay, president Canadian Dental Association.

Chas. H. Moore,

Secretary, Meeting of Delegates.

Editor "Dominion Dental Journal,"

Dear Doctor Webster:

I wish to convey to you my heartfelt thanks for your courtesy in connection with my recent book, and through you to thank my confreres all over this continent for their kindness and appreciation.

A book is a gamble, a shot in the dark, a casting of bread upon the waters and no one can foresee the result. It may get there or it may fall unheeded into the hands of the junkman.

Thanks to the kindness of my friends most of the edition is finding splendid storage in the best families which is very gratifying to the author.

Mark G. McElhinney.

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Dominion Dental Journal

Vol. XL

TORONTO, FEBRUARY, 1928

No. 2

ORIGINAL COMMUNICATIONS

Bacteriology of Focal Infection

SYMPOSIUM ON DENTAL INFECTION, ACADEMY OF DENTISTRY, JANUARY, 1928

W. L. HOLMAN, M.D. TORONTO.

Bacteriologists are more interested in the activities of germs in the body of man and animals than in the study of the isolated bacteria. The conditions in man which permit the invasion of bacteria is by far the most important part of their study and it is therefore not easy to define the limitations of the interest of a bacteriologist. Everyone engaged in medical practice is in truth a practical bacteriologist learning from day to day the many manifestations of bacterial metabolism striving to render the human soil unfavorable for bacterial growth, preventing in innumerable ways the contacts with dangerous germs and never free no matter what specialty he follows from the fear of bacterial complications.

In Focal Infection we have one of the most interesting and important problems of medicine today. It includes in its scope every field of

Medicine and is difficult and complicated. Covering as it does both acute and chronic diseases it might well take up the time of all meetings of this Academy and still be far from having reached its limitations. Such being the case I must confine myself to very broad outlines. My attention was recently called to Olmstead's History of Assyria where there is a reference in which the king's physician told the king the pains and aches he was having in his head and limbs were due to his teeth and he would have to have them extracted. This was in the middle of the 7th Century B. C. Thus it is seen that the idea of focal infection is not very new. Today 2,500 years after we are still deeply concerned with the same problem. Focal Infection as a principle is defined as the process of infection from an established infected focus and the secondary infection of other parts.

Such an infected focus is not simply the site of the portal of entrance in bacterial invasion such as occurs in all infectious diseases but is a local well established infection capable of permitting the passage of its contained germs from time to time into the circulation. Such locally infected tissue is certainly, not continuously active; indeed it may lie latent for months and even years; it may give rise to true bacterial toxemia or have general harmful effects through the dissemination of toxic substances arising from the local tissue destruction and non-specific bacterial products; it may light into activity under numerous stresses in the body economy; it may be but one manifestation of a generalized infection. The important point is that such infected foci do cause secondary infections in the distant organs and tissues and our attention as a rule is drawn to the condition only after this has occurred.

The criteria necessary to prove that an infected focus is responsible for the secondary infection are not always clearly appreciated. If it is suspected that a patient is the subject of this type of infection we must first find the infected focus and then satisfy ourselves that it is actually the source of the invasion. This is far from easy. Merely finding bacteria is not enough; the term "infected focus" means in itself that there are bacteria there. Are the bacteria which are found the same as those which are infecting the secondary focus? Blood cultures may settle the question but because of the transitory nature of the invasion they are all too frequently negative. The reactions of the patient to the bacteria from the suspected focus may be helpful. Culturing the isolated bacteria in the patient's own blood has been tried and it has been assumed that if they grow in the blood in the test tube they will also grow in the circulating blood. Skin tests with these bacteria or their

products have shown that most adults are more or less skin sensitive but the difference between immunity and hypersensitivity cannot be defined. An injection of an autogenous vaccine may cause an increased reaction in a secondary focus and thus help as presumptive evidence. Determining the presence in the patient's serum of various immune substances such as agglutinin, opsonins, complement fixing bodies precipitins and others has also been tried but has not given results which can be interpreted as conclusive. Persistently high uric acid value for the blood has been thought to indicate an actively infected focus as has the presence of lymphocytosis and lowered sugar tolerance. These findings are said to rapidly return to normal when all active foci have been removed or cured.

The evidence however which has been most effectively used to incriminate a suspected focus has been largely pragmatic. Remove the foci and cure the patient's condition! This *ex post facto* type of experiment is apt to be misleading; failures are forgotten and successes over-emphasized.

Animal experiments also have played an important part in establishing the significance of this type of infection. Lesions very closely resembling those found naturally in man, often indeed identical, have been repeatedly produced in animals by intravenous injection of bacteria from human infected foci.

The Infected Foci most frequently met with are those of teeth, tonsils and the intestinal tract. It is remarkable and should serve as a warning that specialists tend to find infected foci confined to their particular field. However on anatomical and mechanical grounds certain foci are potentially more liable to permit invasion than others. The pathology of these will be discussed by others. I may merely mention that ulcers and other infected sites in the crypts of

tonsils, about the teeth in pyorrhoea and periapical infections and in any part of the intestines have rich capillary beds and with the movement so frequent in these parts healing is checked and invasion encouraged. The entrance of the bacteria in most of these cases is probably directly into capillaries but thromboses of small vessels may also occur and from these the germs may be set free into the blood stream.

SECONDARY LOCALIZATION. There are two broad divisions of the views as to why the invading bacteria secondarily infect this or that tissue or organ. The first is that there exist local conditions in the organ which favour the localization. The second is that the bacteria themselves, because of some inherent quality which they have developed in the primary focus, have adapted themselves to attack by choice certain individual organs. This latter is the Elective Localization Theory of Rosenow. I will first briefly discuss the results of Rosenow and his school. The localization in tuberculosis has been considered by many

as confirming this theory. However, no one, I believe, has ever suggested that the tubercle bacillus from kidney, spinal fluid, bone, adrenal, skin or elsewhere shows any tendency to locate in the same organs of the animals analogous to those from which they are isolated. Localization of Tubercle bacilli varies in different animals and depends on the conditions in the animal body favoring or disfavoring the development of the bacillus. Further, practically all the achieved success in the treatment of tuberculosis has been through the treatment of the patient in order to prevent the growth and activity of a common strongly aerobic germ.

Rosenow did not indicate in his tables of Streptococcus localization any differences in the distribution of lesions in the different animal species nor the effect of varying the dosage or the number of injections: nor the different distribution according to the age of the animal; nor the lesions found after various times following the injection; nor seasonal variation. He did not use the same number of animals for each strain.

ROSENOW'S RESULTS—TABLE 1.

LESIONS IN	NUMBER OF ANIMALS. TIME TESTED			
	ISOLATION	LATER	PASSAGE	TOTAL
JOINT.....	131	28	37	196
ENDOCARDIUM	122	17	21	160
MYOCARDIUM.....	82	11	16	109
MUSCLE.....	78	13	19	110
STOMACH AND DUODENUM HEM- ORRHAGE.....	130	16	36	182
STOMACH AND DUODENUM ULCERS.....	92	10	27	129
GALL BLADDER.....	76	5	38	119
APPENDIX.....	65	8	14	87
KIDNEY	54	5	16	75

He did not distinguish between the strains used from the actual lesion in man and those from the suspected focus; nor when he used pure cultures and when mixed cultures; nor did he ever find spontaneous lesions in his animals of experiment. The personal element is hard to evaluate and one is not sure that he used the same meticulous care in determining the sites of localization in all cases. Nevertheless in spite of all these gross sources of error I have taken his results as he gives them but I have rearranged them on what I believe to be a more logical basis. I first determined the number of lesions in the different organs produced by all his injections of streptococci—

Table I. and then I estimated the percentage of each lesion produced by the so-called "specific" or "non-specific" strain.

Table II. The tables show that there is practically no evidence from Rosenow's results which would indicate any elective localizing quality in the so-called "specific" strains. It would appear to be governed by the law of chance. Lesions are produced by certain strains of streptococci injected into the blood stream but it is approximately a 50 per cent. chance whether the strain giving the lesion came from a patient with that particular localization or any other.

The one point of interest is: Does the localization of the injected streptococci depend on an inherent pro-

ROSENOW'S RESULTS—TABLE II.

STRAINS FROM	LESIONS IN	Percentage of Animals. TIME.			
		Isolation	After	Passage	Total
Rheum. Fever	Joints.....	36	11	19	29
Other Cases.....	Joints.....	64	89	81	81
Endocarditis.....	Endocardium.....	30			23
Rheum. Fever	Endocardium.....	27	18	48	29
Other Cases.....	Endocardium.....	42	82	52	48
Rheum. Fever	Myocardium.....	38	36	44	39
Myositis.....	Myocardium.....	17			13
Other Cases.....	Myocardium.....	44	64	56	48
Rheum. Fever.....	Muscles.....	24	0	16	20
Myositis.....	Muscles.....	38			27
Other Cases.....	Muscles.....	37	100	84	53
Gastric Ulcer.....	Stomach and Duodenum. Hem. ..	48	6	25	40
Other Cases.....	Stomach and Duodenum. Hem. ..	52	94	75	60
Gastric Ulcer.....	Stomach and Duodenum. Ulcers..	67	0	48	58
Other Cases.....	Stomach and Duodenum. Ulcers..	33	100	52	42
Cholecystitis.....	Gall Bladder.....	43	20	24	36
Other Cases.....	Gall Bladder.....	57	80	76	64
Appendicitis.....	Appendix.....	71	50	71	69
Other Cases.....	Appendix.....	29	50	29	31
Rheum. Fever	Kidney.....	52	60	50	52
Other Cases	Kidney.....	48	40	50	48

perty in the germ which functions despite alterations in technique of the numerous variable factors in the environment of the animals such as age, diet, season and many others? This point is certainly far from having been proved.

On the other hand we have the overwhelming evidence that the local conditions in the organs and tissues are the determining factor in the localization of invading or injected bacteria. Certain parts of the body are peculiarly liable to become infected from bacteria in the blood as was shown in the first table and this largely depends on the circulation in the finer capillaries. The numerous factors affecting the circulation in different organs will account for many of the individual differences met with. The profound effect of heat and cold in changing the metabolism of the entire body, the reflex reactions from the skin to mucous membranes and deeper structures, the alteration in the composition of the blood and the individual differences in the response to such stimuli must be carefully considered. Diet also plays an important part and vitamin deficiency, even when slight, is enough to change the susceptibility of individuals as does ordinary over or under eating and many other dietary errors. Fatigue is perhaps the most important factor of all because it is so inclusive. Overwork of any organ is at the bottom of probably most of these infections. Fatigue of function lowers the resistance to infection in many ways and thus any organ under continual stress becomes the site of an infection if there is an infected focus delivering bacteria into the blood stream.

Foci of infection becomes established in the tonsils, teeth and other places under a great variety of predisposing conditions some of which have been mentioned. The common cold is frequently the manifestation of conditions favouring such bac-

terial implantations and also favouring invasion from previously established infected foci. Unaccustomed violent exercise in untrained individuals with the accompanying general dilation of capillaries to meet the physiological needs favours the passage of bacteria from infected foci into the blood stream. The rapid collapse of the capillaries after the physiological demand is over favours the stoppage of the circulating bacteria in the slowed current in many organs. Trained athletes have learned these dangers but most of us have not. The bacteria thus implanted will cause infection in the organ with the poorest response to the bacterial irritation. I do not wish to under-estimate the importance of bacteria in the long list of disease processes associated with infected foci but I would emphasize that many of the factors favouring the development of infected foci and determining the seat of secondary localization can be controlled and this gives more hope of success in treatment and prevention than a hypothetical characteristic of the bacteria which throws us back to a purely fatalistic explanation of these disastrous infections.

The focus of infection many times becomes the point in the vicious circle which must be attacked to relieve the situation but unless it is considered more as a serious complication of an underlying abnormal condition than as the primary cause there will be many failures in the treatment. New foci will develop; secondary foci may have been established as distributing points for further blood stream invasions; the damage done may have already precluded repair or cure and too much optimism that the process is stopped because attacked at one point will only lead to discouragement. Focal infection is the result of errors in our methods of living and will not be checked until we understand more thoroughly than today what these

errors are. There is no specific bacterium or virus concerned; it is a continuous contest of bacteria of varying virulence against the alter-

ing resistances in the tissues of the human body. There is no sweeping victory possible. It is an everlasting truce.

The Pathology of Focal Infection

W. L. ROBINSON, B.A., M.B., TORONTO, DEPARTMENT OF PATHOLOGY,
UNIVERSITY OF TORONTO.

While the subject of focal infection, to the pathologist, may lack the glamor of a rare tumor, the interest of a new disease or the tragedy of a fatal infection, it still must be viewed with much concern and warrants his best efforts in the elucidation of its obscurities. The problem does not concern itself so much with the fatalities among its victims as the big economic factor involved in the general lowering of efficiency and loss of good health.

Focal infection has been described as the process of infection from an established infected focus and the secondary infection of other parts. There must be an established primary focus of infection which is more or less persistent and oft-times obscure in its manifestation. Secondary foci of infection become established in other parts of the body from this original focus. Broadly speaking all cases of infection with secondary dissemination might be grouped under the heading of focal infection. This use of the term however is too comprehensive and is not in accord with the generally accepted idea. Focal infection is characterized by lesions of obscure origin which in the last few years have been found to be the source of chronic foci of infection in other parts of the body.

The pathology of this condition involves a review of the primary lesions and their secondary implantations. The primary lesions are something

more than mere portals of entry for bacteria. It has been shown that bacteria will pass through the unbroken wall of normal intestinal mucosa. This represents a portal of entry but not necessarily a primary focus of infection. To be a primary focus there must be an established infection which is persistent and usually low grade in type. These foci are often rather obscure in their clinical manifestations. They are usually found in the tissues exposed to extraneous sources of infection such as the naso-pharynx, including the accessory sinuses, middle ears, mastoids, teeth and tonsils, the respiratory system, the gastro-intestinal and genito-urinary tracts. The tonsils and teeth are probably the most important.

The tonsils probably owe their importance as primary foci of infection to their peculiar anatomical structure and their position at the gateway to the naso-pharynx. Their crypts are tortuous and deep, extending practically to the capsule. Their walls are held in close apposition by pressure of the surrounding lymphoid tissue. The mouths of those which empty anteriorly or superiorly may be partially closed, those anteriorly by the plica triangularis and the latter by the hood-like superior wall of the supra-tonsillar fossa. The supra-tonsillar crypts have the added disadvantage of draining upwards. The result is that a certain amount of cellular debris is found in all crypts. Bacteria from the

faucial cavity enter these crypts and there find congenial soil for their development.

In childhood the primary infections are prominent. The tonsils in this period of life are large and prominent as are all lymphoid structures of the body. Infections are usually acute and run a fairly rapid course, ending in resolution without any secondary foci being necessarily established. In adults, however tonsillar infections are more liable to persist and to continue as low grade processes from which bacteria are liberated into the blood stream to localize in susceptible areas in other parts of the body. The tonsil infection may be the result of a common cold or secondary to teeth, or sinus disease. It may be more or less obscured by the prominence and often more serious manifestations of the secondary foci.

In a more careful study of the crypts of the tonsils we find certain peculiar anatomical structures which favor infection. Their lining epithelium is very thin, being not more than one or two layers of cells in thickness. They also have papillae which are rich in capillaries. The capillaries are thus brought into close proximity to the lumina of the crypts. The lining epithelium offers little mechanical resistance to the entrance of foreign particles from the crypts into the parenchyma. The conditions are ideal for the invasion of bacteria and the absorption of their toxic products. The outer exposed surface is covered with a comparatively thick layer of squamous epithelium which no doubt protects it from direct infection.

The establishment of an infection in the tonsils is dependent upon the entrance of pathogenic bacteria into the crypts and their continued growth. This latter factor of course is determined by the virulence of the bacteria, in relation to the resistance of the host. Poor drainage of the crypts must also play an important part. This may be caused by an excessive

keratinization and desquamation of the lining cells which accumulate and plug the exit of the crypts. Old fibrous adhesions may produce similar obstructions. The process may first be acute, later it may subside into a chronic phase or be chronic from the first.

Clinically the tonsils may show very little. They may be small and buried. It is only when they are removed and sectioned that their true nature is revealed. One finds the crypts to contain an excessive amount of cellular debris, whitish or greenish in color, and very often with an offensive odor. The orifice of a crypt may be found obstructed and its lumen dilated and filled with purulent material to form an abscess.

Microscopically, considerable accumulations of cellular debris with lymphocytes and sometimes polymorphonuclear leucocytes are found in the crypts. The most important and interesting finding, however, is the presence of small ulcers in their walls. These may be rather extensive and have in their bases numerous widely dilated capillaries. Such capillaries offer easy entrance for the bacteria of the crypts into the general circulation. Where the epithelial lining is intact it usually shows a varying infiltration of lymphocytes even to the point where the lining cells are badly disrupted. One also frequently finds the "Ashes and Embers" of former infections in the scarring of the parenchyma and the thickening of the capsule and trabeculae. In fact it is quite unusual to find normal tonsils in adults.

In a short paper of this nature it is impossible to discuss individually the secondary foci. They may be distributed widely throughout the body and produce lesions of considerable magnitude and seriousness. They appear to have a predilection for serious membranes although they may be found almost anywhere in the body. The mechanism which determines the loca-

tion of secondary foci has been discussed by Dr. Holman. In connection with the secondary lesions however, one thing seems certain, namely, one attack appears to lower resistance and predisposes to subsequent attacks which follow with each flare-up of the primary focus. Again a secondary focus may become so well established that it in turn becomes a nidus of infection for the further dissemination of bacteria to the establishment of other secondary foci.

While the clinical results may be quite varied, the pathological findings other than the organ involved, have many features in common. Bit by bit the parenchymal tissues of the involved organs are slowly destroyed by the repeated attacks. With subsidence of the inflammation there is healing, fibrosis, and a diminution in the number of capillaries in the involved area. This brings about a local lowering of resistance and renders it susceptible to new attacks. In such a manner the function of the organ is gradually interfered with and symptoms make their appearance. The functional disturbance however, may at times be out of all proportion to the anatomical damage.

In the active stage, the inflammatory reaction is non-suppurative in character. That is, no pus is formed. The reaction may still be acute in character showing oedema of the tissues, engorgement of the vessels and hemorrhage. The cellular infiltration, however, is that of lymphocytes rather than polymorphonuclear leucocytes. The infection may of course be complicated by pyogenic organisms. These would add somewhat to the acuteness of the reaction.

In most cases, however, the reaction is of the subacute or chronic variety. The clinical manifestations are very few and the degree of tissue reaction is moderate. The vascular response is much less. There are no hemorrhages. The cellular infiltration consists of lymphocytes and plasma cells. There is, of course, destruction of parenchyma, and fibrosis, with such reactions. One frequently finds a combination of damaged parenchyma, fibrosis and an active inflammation.

In such organs as the heart, this means much, especially when one of the valves is involved and the myocardial changes are advanced. In the gall-bladder and appendix the damage exhibits itself largely as a reflex effect on the whole gastro-intestinal tract, causing a varying amount of disturbance of digestion. In the pancreas the inflammatory reaction may lead to an interference with its glycogenic function and terminate in diabetes. Similar results might be enumerated for many other organs and tissues, in particular for bones and joints.

Conclusions—1. The term focal infection, should be restricted to those cases with obscure lesions, traceable to chronic foci of infection in various parts of the body. 2. The primary lesion is characterized by its location in organs exposed to extraneous sources of infection and the low grade persistent type of infection. 3. The tonsils and teeth are the most common sites of primary infection. This is favored by their anatomical position and structure. 4. Secondary foci may occur anywhere in the body. They are subject to repeated flare-ups or re-infections and ultimately lead to damage of the organ and interference with function.

Dental Viewpoint of Focal Infection

A. E. WEBSTER, M.D., D.D.S., F.C.C.D.

Delivered before the Ottawa Dental and Medical Societies, Jan. 16, 1928.

Dental literature teems with papers, discussions and references to the subject of my address, but, strangely enough, medical text books are relatively lacking in references to the subject. Kolmer, in the last edition of "Infection, Immunity and Biologic Therapy" of over a thousand pages, allots four pages to focal infection. One would have expected a full discussion along the lines of the work done by Billings, Gilmer, Rosenow, Price and others. It would seem that medicine has been used to the idea of focal infection and thus does not need to stress it, while in contrast dentistry has found a new hook on which to hang its hat.

The idea of focal infection is not new to either medicine or dentistry if one is to believe the records of dental writings. There are evidences of this knowledge centuries old. In the nineteenth century Benjamin Rush records the successful treatment of a general disease by the removal of a tooth, and Brown, a dentist of Thorold, Ontario, caused the cure of a chronic iritis in 1864 by the treatment of a cuspid tooth. These are evidences of the truth of that ancient adage that no part of the human body can be detrimentally affected without its having an influence on all other parts of the body. Dentistry has for decades forgotten this truth only to re-learn it when Hunter threw down the challenge to American dentistry. Hunter accused American dentists of causing disease and death rather than curing it and prolonging life.

It is this broader aspect of focal infection which has been in the minds

of well-educated physicians and surgeons for centuries that is gaining the attention of dentistry during the past few years. One would think from reading dental literature and following the actions of some physicians that the only cause of nearly all diseases was focal infection, or still more narrowly speaking, teeth with non-vital pulps.

Not a few writers seem to get all muddled up when discussing focal infection of dental origin and oral sepsis. There is no reason for using these terms interchangeably, and there are good reasons for separating them. Oral sepsis is what the dentist calls a dirty mouth. It has accumulations of food, calculus, decayed teeth, sordes, bacteria and dead epithelial cells. A focus of focal infection is a circumscribed area of low-grade bacterial infection from which organisms of their poisons pass into the lymph or blood stream. Oral sepsis usually has its effects in and adjacent to the mouth, often of an acute character as well as a chronic effect on the alimentary tract. Hunter was the first to point out that the anaemias are always associated with a dirty mouth, and Steadman has more recently called attention to the association of cancer of the intestinal tract with oral sepsis. These conditions do not seem to be intimately associated with infections around the apices of teeth as is found in such general diseases as rheumatism, arthritis, endocarditis, pericarditis, etc.

Surgeons and pathologists of the recent past recognized focal infection as above defined, but more recently

there is a tendency to broaden the meaning of the term to include poisons circulating in the blood of bacterial origin. In fact, the authorities consulted do not make it clear that the systemic effects are from bacteria floating in the lymph or blood or that it is the poison produced in the focus that does the damage.

Some of the most careful writers on the subject of focal infection, such as Billings, Gurd and Kolmer, group infections, first those which gain ingress to the body and at once become active and produce acute symptoms of disease as in the acute infectious diseases, and second, those which are now under discussion which produce a localized and confined infection without symptoms; from these primary or localized infections micro-organisms may gain access to the lymph or blood stream and at other points of low resistance cause another focus of infection. This latter is called focal infection.

Billings says these primary foci of infection may occur anywhere in the body, the most common location being teeth, jaws, tonsils, mastoids and other accessory sinuses, but it must not be forgotten that infections of primary origin often occur in fingers, toes, appendix, gall bladder, genito-urinary system, air passages and skin. Too often dentists and some physicians think of the primary infection as coming from the teeth or tonsil only. Recent observations by Duke, Hatton, Rickert, McDonagh and some English authorities would indicate that apical ends of teeth and pulps of vital undecayed teeth are often secondary seats of infection. The bacteria having come from some other part of the body.

It is well to look for oral sepsis in children, adolescents and in old people if many teeth remain and focal infection from teeth in middle-life and tonsils of the young. Rosenow has said that tonsillar infection is nearly always secondary to oral sepsis.

Clinicians have often observed that, after finding a focus of infection and completely eradicating it, the patient has not been materially improved. In such cases it has been advised to reopen the wound and do a more thorough operation. The explanation of such failures might well be that there might be one or more secondary infections still distributing bacteria or poisons or that the tissues of essential organs are so reduced in function that months may be required for recovery, or no recovery can take place. Too much hope must not be held out for the cure of a chronic disease by the removal of a long standing primary focus of infection. Thus primary infections should be treated before secondary infections occur and before essential organic tissue is destroyed.

Dentists have often observed an acute peridontitis following the insertion of a gold foil filling in a tooth with a non-vital pulp in which the canal had not been opened at the time of operation. They have seen a similar occurrence after setting a bridge, an inlay or a crown. And also very marked inflammatory processes following the removal of third molars, and in some cases death from removing several infected teeth. Physicians and surgeons examine accident patients very carefully for focal infections. What is the explanation? There may be many virulent organisms present at the point of traumatism or in a focus of infection which only needs the waste products of dead tissue to start an abundant growth. The lesson is to avoid traumatisms in the presence of focal infections or oral sepsis. This is especially true in root canal treatments.

Physicians have observed how frequently their patients develop acute local peridontitis or acute pulpitis when the symptoms of an acute infectious disease have subsided. Then again older patients often begin an illness with an acute alveolar abscess, then a tonsillitis or mastoid, and fin-

ally a pneumonia. Usually these cases are due to secondary foci of infection or due to oral sepsis.

Why does the dentist want to know these things? Not to treat systemic diseases but to recognize them and to know the significance of infection even in teeth.

Hatton thinks the condition of the oral cavity is an index of the physical condition of the patient and that no essential organ is alone damaged by disease.

From what has been said, and chiefly from what can be inferred, dentistry is plainly at the parting of the ways. It must take full responsibility for knowing the same fundamental subjects as the physician if it intends to consult with him in determining the treatment and prevention of such diseases as may be caused by focal infection of the teeth or he must take the other alternative of being directed what to do by someone who knows these things. The dental educational institutions of this continent have taken full responsibility and added sufficient time to not only teach all the necessary fundamentals but also to give instruction in treatment when it involves the teeth. Under these circumstances, what is the duty of the practitioner who has not had these courses of study? Go right ahead and practice and weigh his experience against the fundamentals of the youngster. In the meantime, read current medical and dental literature. Read such books on histology, pathology, medicine and dentistry as can be obtained in the dental library of the university and buy one good reference work on each of general medicine, surgery, pathology and dentistry.

It must be plain to anyone who knows that chronic infections about the root ends of teeth are the cause of such general and fatal diseases as endocarditis, cancer, rheumatism and anaemia that he must, for the good of his patients, make a careful study of the dental relation of the whole prob-

lem, in consultation with a physician.

To come close in to the subject and apply what has been outlined there can be little of a very positive and definite nature stated. What, in the opinion and experience of one diagnostician would indicate the removal of one or many teeth might lead another to retain them. So, while ever men live, there will be differences of opinion in matters which one or both know little about. Focal infection is such a subject. Among those who have made a study of the subject, there is no difference of opinion on the broad principles of getting rid of points of infection which are known to be detrimental to health, but there are honest differences of opinion as to the (a) presence of infection in rarefied areas at root ends of teeth and as to the (b) methods of getting rid of such infections or the (c) consequence of such infection.

In general, what determines the removal or retention of any tooth in the mouth in the health of the patient as determined by the physician and the condition of the peridental membrane as determined by the dentist.

(a) Other causes of rarefaction—trauma, senility, anaemia.

(b) Extraction, apicoectomy, medication.

(c) Not all infections are harmful.

We have laid down the positive rule which admits of very few exceptions that all patients suffering from active syphilis, tuberculosis, anaemia, rheumatism, endocarditis, diabetes and acute eye affections must not have left in their mouths any point of infection even if it involves the loss of every tooth. On the other hand, robust, healthy patients of good family history may have many or all such infected teeth, with a good peridental membrane treated by conservative methods with great comfort and benefit.

We should remember, that nature tends toward recovery in every inter-

ference with her processes. We have all observed the general symptoms of the acute alveolar abscess subside and the chronic abscess follow with no symptoms, then comes the granuloma, then the cyst, which is sterile. If such things happen by nature unaided, it indicates that with our assistance such chronic infections will recover if we leave tissue enough to retain a useful tooth.

Problem of Diagnosing a Focal Infection.

To the dentist or physician who advises the removal of all teeth with dead pulps, infected pulps or teeth with crowns, there is no problem in diagnosing dental focal infection except to determine the vitality or non-vitality of pulps. So far as dentistry and the teeth are concerned, such persons have no need for general anatomy, physiology, chemistry, bacteriology or pathology. All they need is anaesthetics, forceps and the exodontist's skill. The very men who recommend such treatment for focal infection answer the question by retaining such teeth within their own mouths. I venture to say there is not one man in this room who has a full complement of teeth without a non-vital pulp, and there is not a stampede to Dr. Coupland's office either.

There is no evidence to prove that every rarefied area as shown by an X-ray of the root end, is infected, and if it were, that it is the cause of a particular disease even if contents were injected into a rabbit and the rabbit died, or if the removal of the tooth were followed by the passing of certain symptoms, it would not prove anything. The school boys' cure for pain in the side following running is to spit on the underside of a small, flat stone and replace the stone on the ground. The spit cure for pain in the side is on a par with some of the conclusions reached by modern research so called. On the other hand, just because an X-ray picture shows no rarefaction it doesn't prove that there

is no root end infection or that it is not the primary cause of some chronic disease.

To determine if a particular tooth is the cause of a particular disease requires all the skill and experience of the best-trained men in medicine and dentistry. When the physician sends his patient to the dentist and asks him if the patient's pernicious anaemia is caused from a central incisor tooth with a non-vital pulp, the dentist feels complimented indeed, but wonders if the physician knows how little he knows about it, and also wonders how much the physician knows about it when he would ask the dentist such a question. As for such positive knowledge, there is none. Hunter, Steadman and others have noticed that practically all patients suffering from pernicious anaemia have oral sepsis. Then others reason that oral sepsis is the cause. Remove such a tooth, the patient feels better and a cure is proclaimed. The cured case is the sure refuge of the quack.

To decide such cases, the dentist and physician must meet in consultation. The physician brings to the problem of family history, personal history, history of the present complaint, his general medical experience and practice and his responsibility for the general treatment of the case. The dentist brings to the problem the dental history, carefully tabulated examination findings, with an opinion of the extent of the effect of the local conditions. If the severity of the symptoms demand immediate radical action, removal of the tooth may be advisable. After such a conference, the patient will get the best advice.

It must not be thought that extraction of a tooth is the only means of getting rid of apical infection in either acute or chronic cases. It is many times thought to be unwise to extract in acute fulminating cases but to open a window opposite the apex and provide the maximum of drainage

with the minimum of exposure of absorbing surface.

In chronic cases where little if any of the root apex is involved, cleaning out of the canal and thorough mild medication will stimulate a complete recovery. In such cases as have exposed or destroyed a small portion of the peridental membrane then the surgical cleaning of the root end and proper medication will bring about a fairly healthy condition in a normal patient.

Factors which determine whether infected teeth should be treated medically, surgically or radically by extraction.

General.

The physician's report:

- (a) Family history.
- (b) Personal history.
- (c) Present complaint if any.
- (d) Occupation.

Dentist's report:

Dental history of family; dental history, personal; vital or non-vital pulp; location of tooth; anatomy of tooth root; value of the tooth to the patient; how long pulp is dead; how old was the patient when the pulp died; how much vital peridental membrane left; how much apical involvement? how firm is the tooth; how many teeth involved; what size is the area of rarefaction; how often has the area been acutely inflamed.

Discussion of Dr. Webster's Address

BY DR. PATERSON.

Dr. Paterson, in his remarks said he wished to stress the bearing that oral sepsis and focal infection had on systemic disease and in this connection reviewed some of the recent investigations in Pernicious Anaemia.

It has been found that 99 per cent. of Pernicious Anaemia cases have no free hydrochloric acid in the stomach; and that many of these cases have been known to have Achlorhydria for as long as 25 years, before developing Pernicious Anaemia. The hydrochloric acid of the stomach being the strong antiseptic barrier, the Achlorhydria patient has lost the power to deal with the bacteria ingested with his food; and accordingly these patients have duodenal contents abnormally alkaline and a good flourishing ground for streptococci. Knott found in his investigations of 400 cases with normal gastric secretions that the duodenal contents were practically sterile in all: While in his investigations of

a series of pernicious anaemia cases 97 per cent. showed the presence of streptococci swallowed from infected teeth, tonsils or sinuses.

Now whether we believe in the theory that a hemolytic streptococcus entering the system from the duodenum is the cause of Pernicious Anaemia or not we surely must recognize the great necessity of eliminating oral and naso-pharyngeal sepsis in this regard. And all the more important does it become when we consider that it is estimated that one out of about every seven individuals have achlorhydria, and have it over long periods of time.

In considering oral sepsis we are used to thinking of it only in the young and the old and generally the result of personal carelessness and neglect, but I wish to point out that it is always present in the patient who has high temperature from any disease, and I wish to emphasize the import-

ance of thorough antiseptic mouth care in all bed patients. How often do we find the inroads of focal mouth infection when a patient is convalescing from an acute illness.

Now, in regard to eradicating foci of infection, I wish to bring forward a few points of importance. While we all know of cases cured by treating a focus of infection, how often do we find a patient who has had his tonsils removed, then all his teeth removed, and even his appendix removed, and is still suffering from his trouble. This only serves to show the great care necessary to decide whether a focus of infection is the cause of the trouble: or whether other foci of infection are

also present, or whether the focus of infection has been adequately dealt with: or again whether the focus has been dealt with too late and permanent tissue damage has resulted. In chronic cases I feel that it is very unwise to promise good results from the removal of a focus of infection, nevertheless I think the primary focus should be removed. I have learned much from the magnificent presentation of this subject by such a learned authority as Dr. Webster and hope that future meetings of this kind, where both the Dental and Medical profession get together may throw further light into this most interesting field of study.

Synopsis of Discussion by Dr. Campbell Laidlaw of Dr. A. E. Webster's Address on "Focal Infection"

Delivered before the Ottawa Dental Society and the Ottawa Medico-Chirurgical Society on January 16th, 1928.

After saying what a privilege it had been for him to listen to Dr. Webster's very excellent address and stating his appreciation of the honor which had been done him by the Dental Society in asking him to participate in its discussion, Dr. Laidlaw expressed the thanks of the Medical Profession to the Dental Society for the kindly spirit of hospitality which had inspired them to extend an invitation to the Ottawa Medico-Chirurgical Society to join together for the consideration of a problem of mutual interest and concern to both professions.

In commencing the discussion of the paper itself, he first referred to the broad and accurate knowledge of the subject displayed in the speaker's handling of it. He thought that his

views would tend to dispel many illusions and misconceptions in regard to it. No problem had been found to be of more vital concern to practitioners of medicine and surgery. Dr. Webster had indicated the prevalence of many physical incapacities which were continually cropping up as the result of small foci of infection and it was necessary for the Medical Profession to realize the true nature of these causes. It was quite true, for instance, as we all knew, that as the speaker had said, these causes in themselves were resulting, from day to day and from week to week, in great economic loss, simply by reason of the fact that the auspices of the Dental Profession were not frequently enough invoked.

It had been pointed out by Dr. Webster that oral sepsis and focal infections were things apart, and, in a certain definite sense, this was undoubtedly the correct view, but that, from the standpoint of etiological factors, it was well to bear in mind that oral sepsis was frequently the progenitor of focal infections. The picture, however, that one might well bear in mind while considering the differences, is that of a foul, neglected oral cavity causing derangement of local functions with a consequent interference with lymphatic drainage; an invasion of the alveolar lymphatic system, breaking down of local resistance with the development of strongly entrenched areas of infection about the teeth, and later, perhaps, with a general weakening of systemic resistance; the dissemination from such areas to remote parts, of the micro-organisms and their toxins (organisms very commonly involved being staphylococcus, streptococcus pyogenes, streptococcus haemolyticus and streptococcus viridens). With such a picture in view it was necessary to review the whole subject of infection and immunity, never forgetting the definition of infection as being a condition brought about by the gathering together of micro-organisms within the tissues, their proliferation there, their elaboration of toxins, their disturbance of local function, their destruction of contiguous tissues because of lowered local resistance, and, possibly, their spread to remote parts of the body with consequent baneful results. Accordingly, it was essential to pay great attention to the subject of immunity in all its associated aspects. It was necessary, for instance, to aim at keeping the vital resisting forces of the body at a high level by all reasonable measures, for example, the providing of stimulants to resistance, arranging for vitamins in the diet,

the regulation of hours for rest and exercise, and wholesome sanitation, generally. Dr. Webster had spoken of pernicious anaemia. It was questionable if any practitioner had ever seen a case of pernicious anaemia where bad teeth had not appeared as part of the pathological picture, but we also knew that, apart from the bad teeth being a potent etiological factor in the disease, the question of immunity must definitely be taken into account. In this connection, too, it was interesting to note the effect of liver extract in the treatment of pernicious anaemia. Years after a case had become well established, the administration of liver extracts appeared, undoubtedly to stimulate regenerative forces regardless of initial and secondary foci of infection. Then again, resisting forces were evidenced as being of real import in the various arthropathies, undoubtedly due to such foci about the mouth as Dr. Webster had described, for it might be quite late in life when, with a general disturbance of endocrine function their remote effects would be observed. Many other aspects of the subject might be dealt with from a medical point of view. One could speak, for instance, of cases of multiple neuritis, the goitres, and general toxic states.

Dr. Laidlaw concluded his remarks by further congratulatory references to Dr. Webster's paper, to the President of the Ottawa Dental Society and its members for its success in bringing about such a successful meeting, and expressed the hope that the Ottawa Medico-Chirurgical Society would be able to reciprocate in a similar manner at a not too distant date.

Discussion of Dr. Webster's Address

DR. S. W. BRADLEY, OTTAWA.

Mr. President, Doctor Webster, Gentlemen. It is indeed a great honor to me to be allowed to take part in this discussion this evening. Some time ago when our enthusiastic and energetic President announced that Dr. Webster was to speak to us on this subject, he said he would tell us definitely when to extract and when to retain pulpless teeth. I hardly thought Dr. Webster would attempt this, because so far there is very little real scientific knowledge on the subject. This matter among research workers and scientists is still subjective, but we have considerable clinical evidence from which to make certain deductions which may be right or wrong. We must not be too positive as yet in any of our statements. Each man has his opinion or viewpoint which may honestly be a little different from his fellow. The general family medical practitioner has his viewpoint, the bacteriologist and histologist his, the internist his and the medical diagnostician his. Even among us dental practitioners there are different shades of opinions. The general practitioner of dentistry has his, the prosthodontist and periodontist have their views differing slightly from the exodontist. Even the orthodontist has his "climate of opinion" and it is to this last cult that I belong. We perhaps value teeth individually and collectively more than any other branch of dentistry because we fully appreciate the fact that perfectly functioning natural dentures, with no teeth missing are the most beneficial as well as beautiful adjuncts to the physical well-being of the person possessing them that they can

have. We know that every tooth has its correct place and use in the masticatory apparatus; and that the loss of even one, may throw the whole beautiful mechanical balance out of correct function and may later lead to a train of dental ills which can eventually mean wearing artificial dentures, and no matter how well these are made, and we must not depreciate the splendid efforts of modern prosthetic dentistry, are after all only artificial substitutes for the natural organs.

Early in April, 1926, I received a letter from Dr. Dalton Richardson of Austin, Texas, asking for my views on oral focal infection. As I went about my work I made some notes and had them all together and in shape for an answer to his letter when I took a lengthy vacation. I was ill for eight months and by the time I could answer him it was too late to reply. As my contribution to this discussion I am going to read my answer to Dr. Richardson's letter. Here are the parts of his letter relating to this question.

I am preparing a paper for the Texas State Medical Association, entitled "The Roentgenological Evaluation of the Dental Pulp". This will be discussed by a dentist, surgeon, internist, and by members of the Radiological Society.

I desire to give a fair judgment of the X-Ray evidence shown in dental films. I want to give the X-Ray findings that indicate extraction and also the findings that justify retention of pulpless teeth.

I am confining myself to "pulpless teeth and their associated periapical conditions" in this paper and am not

attempting to cover other foci of infection.

I would like to present the basic findings for the interpretation of the border line tooth in terms of X-Ray shadows—whether it is better to retain the pulpless tooth for mastication or whether it should be sacrificed as a potential focus of infection.

The theme of my paper will be "Never sacrifice a tooth unless there is a positive indication for its removal." I want to show what the X-Ray findings are that always indicate extraction; also, I want to show what is the value of the various vitality tests in connection with the X-Ray interpretation of the dental pulp."

I realize that my answer is only a repetition of some of the thoughts so splendidly expressed by Dr. Webster, but I believe they are worthy of repetition, even if I express them in a most homely way.

Dr. Dalton Richardson,

Austin, Texas.

Dear Doctor Richardson:

Your letter leads me to believe that the careful thinking, conscientious physicians and dentists all over the country are in much the same predicament with regard to focal infection in its relation to pulpless and non vital teeth.

In trying to choose a rational course in dealing with this question I believe there are not two sides as many dentists and physicians think. There is only one—the patient's. We must do what we believe to be the very best for their health.

I have no reprints of any of my articles, which have been very few on this subject, but I am glad to put on paper for you my views with regard to this question. I am neither a research-worker nor a bacteriologist, nor have I the training of a physician. I have been practising dentistry for twenty years, ten years as a general practitioner and for the past ten years as an orthodontist and dental radiographer. I have done con-

siderable of the latter work for my dental and medical confreres. I have read extensively and I believe carefully on this subject and have tried to extract the wheat from the chaff.

I do not wish to be classed as a hundred per center for or against extraction, but as a conscientious worker for the patient's best interests.

In reading a dental X-Ray film the first thing to consider is the patient's general health and I may say age too. On this depends our radical or conservative interpretations. I do not believe that all or even many pulpless teeth are dead teeth. I believe that the pulpless, or the tooth with a non vital or dead pulp in it if you wish to say it that way, is nourished by the periodontal membrane. Nor do I hold the opinion that all pulpless teeth will eventually give trouble or be a likely source of systemic infection. I believe that in some cases, perhaps not many, they remain healthy for years. I believe too that some teeth may have been unhealthy and have diseased areas at the root ends in a young patient and that they may a few years later be perfectly healthy, that is providing the root end is smooth, not eroded or rough, and the patient's health and resistance is very good. In these cases the apical infection has been systemically absorbed by the lymphatics and there has been healthy regeneration of the periapical tissues. If the lamina dura is found to be intact, if the tooth appears to fit nicely in its socket, I believe that tooth is free from any infection that may cause systemic disturbance. Of course the patient's general health is the deciding factor. If for example there are say half-a-dozen pulpless teeth in a mouth, with nicely filled roots and no granulomas and the lamina dura appears to be intact; if that patient's color is not good, if he has that gray pasty anaemic appearance and if his physician cannot locate any other source of his systemic disturbance I would certainly recom-

ment the removal of every pulpless tooth in this mouth as a last resort, and if the patient were in a precarious condition they would be removed only one or two at a time.

Finding the cause of the patient's illness is very often a most difficult thing for a physician and sometimes it cannot be located definitely. Teeth have been and are being removed with the hope that their removal would cure the malady. If the teeth were unhealthy and infected their removal did cure in some cases and would likely help all cases to a more or less degree. But there are cases which have come under my notice where the teeth, all of them, were removed, likely without close examination and their removal did not in any way improve the patient's health. If the patient had a poor mouth for a denture the artificial substitutes were a very poor make-shift for the good natural masticatory organs lost through mistaken diagnosis.

A patient is changing their dentist and is referred to me for X-Ray examination by the new dentist. He wishes to know the condition of all the teeth before he starts work on them. This patient is in perfect health, no neuritis, no rheumatism, no heart or kidney trouble, is just feeling fine and the X-Ray examination reveals a number of bad teeth. Here is a concrete example. Just recently I had a lady of about thirty-five who came to me. She was the picture of health. She told me she had never felt better in her life. There was a lot of dental work in her mouth and I found seven teeth which had the appearance of being bad and which if left as they were would in time assert their potency to impair her good health. There was nothing to do but advise the removal of the worst of them and opening into and the treatment of the single-rooted teeth and the multiple-rooted ones whose roots appeared to lend themselves to successful treatment. This lady was hor-

rified and protested, but I think she will follow my advice and will have a careful check up later on. No matter how well a person feels they should not carry diseased teeth with eroded root-ends or with granulomas or cystic areas enveloping the root apices.

The filthy unkept mouth may not be diseased. It lowers the persons resistance against disease but extracting the teeth in such cases does not do away with the dirt. Their artificial dentures will likely be just about as well cleaned as the natural organs were. The physician must be able to distinguish between filthy and diseased tissues. If they are the former a careful scaling and cleaning and polishing by the dentist accompanied by a heart-to-heart talk on the necessity of keeping the oral cavity clean and healthy is indicated. I tell the children I work for that it is more important for them to keep their teeth clean than their faces, the former will decay if not kept clean. The same might be told adults with dirty mouths. In examining a mouth we must be able to distinguish between fermenting food debris and pus. These are sometimes confused and good teeth are sacrificed as a result.

Teeth affected by periodontoclasia (pyorrhea). Speaking generally the pus exuding from the pockets surrounding such teeth is swallowed and taken care of by the digestive tract. It is not taken into the blood or lymph streams directly as in the case of pus from abscesses and granulomas attached to the apices of teeth. Pus from pyorrhea pockets does not appear to affect the patient's general health so quickly or so seriously as pus absorbed from granulomas and abscesses, but nevertheless these pyorrhoeal lesions will sooner or later assert their evil effects on the general health of the patient. If the X-Ray shows one-third to one-half of the alveolar process intact and healthy around the root of the tooth so

affected and the periodontal membrane be not too thickened I believe it can be safely retained, provided the traumatic occlusion is corrected, for such teeth are generally bumping the opposing ones, and the pus pocket must be curretted and the root surfaces made smooth and all irritation removed. If the exudate of pus cannot be completely stopped by treatment such teeth must be removed.

There are two principal types of rarefied areas seen around diseased root ends. The definitely walled-off area and the diffused area. The former may be a granuloma or of cystic formation and I understand from clinical experience that the person having these walled-off areas is slowly absorbing a small amount of toxic poisons into the blood stream. When the areas are diffuse and not so definitely marked we may safely infer that the infection is acute and if treated at once there is a good chance of saving the tooth and restoring it to health and usefulness.

It is regrettable that there are still a few physicians, and I may add, dentists too who do not value teeth more than they do, and possibly there are a few physicians also who never search further than they can see in making a diagnosis and as the oral cavity is easily examined they start here, and if they see a gold or porcelain crown or a piece of bridge work in their patient's mouth they stop right there and without further examination order the crippling of that person's masticatory apparatus, the teeth of which may not be the cause of the systemic trouble at all. All gold and porcelain crowns and gold bridge-work are not bad. Properly made hygienic fixed crowns and bridge-work on healthy roots are as fine a restoration as can be put in a patient's mouth, and very often are much better than a lot of this so-called removable bridgework with its irritating clasps and spurs which so often destroy or irritate the teeth and

tissues over which they are placed.

The crowned tooth may be looked on with suspicion always, but let us remember it is not the crowned end of the tooth that causes the systemic infection, if the crown is fitted properly. The infected root under the crown is the seat of the trouble. Let us remember too that artificial dentures no matter how well made are only artificial substitutes for the natural organs and if the latter can be restored to health and usefulness we are giving that patient a greater service than if we destroy natural organs and supply artificial substitutes.

With reference to your question concerning vitality tests I find that tests made with warm or hot water, cold water or ice if possible to procure cannot be beaten. Hot gutta percha is good too. The electric pulp-tester is a useful aid, but I do not think so much of it as I did formerly. It will sometimes give you the impression that the pulp is vital and on further examination with the X-Ray you will find that the tooth is pulpless, the sensation having been carried through the healthy periodontal membrane. I find the Cameron mouth lamp of great use in transillumination of the alveolar process and find it useful in examining suspicious teeth and areas before X-Raying them.

In closing this too long discussion let me say that we must not extract teeth because in Mrs. Jones particular case relief was obtained from her neuritis by removing her teeth. Let us consider each case carefully and not extract unless we are sure the teeth are bad, or if all the other likely sources of systemic infection have been removed by the physician. Then we may remove the doubtful looking teeth and as a last resort the ones not so doubtful looking, but never healthy teeth unless the prosthodontist can make a better restoration with its healthy ones removed.

Here's another thought in closing:

Do dentists in their five years' college training learn enough of medicine to appreciate the physician's viewpoint? Do physicians in their seven years' training learn enough of dentistry to fully appreciate the dentist's viewpoint?

Let there be between our two professions mutual understanding, mutual respect and mutual desire for our patient's best health, happiness and appearance. As I said before, let there not be two viewpoints on this question, only one, the patient's.

Discussion of Dr. Webster's Address on Focal Infection

DR. COUPLAND

Mr. President and Gentlemen:—

I feel that it is an honor to discuss Dr. Webster's paper to-night, for I truly believe it to be a great paper. I want to compliment him on his excellent presentation, and on his sane, scientific attitude. Being both a physician and a dentist, he is in a happy position to discuss this subject.

After hearing the splendid discussions, it is not necessary for me to touch on many of the points. Dr. Laidlaw and Dr. Paterson have dealt with the general medical view, and Dr. Bradley has discussed the dental end in detail, and expresses my views on many of the phases dealt with.

The pulpless tooth problem is the biggest in dentistry today. The logical solution would be, prevention of the pulpless condition by finding cavities through periodical examinations. Thus, the teeth would be filled before the pulp is involved, and through time, the pulpless tooth problem would be greatly eliminated. This will likely solve many of the troubles of our children's children, but it certainly does not solve ours. Dr. Webster has said, "There is no difference of opinion on the broad principles of getting rid of points of infection which are known to be detrimental to

health, but there are honest differences of opinion as to the presence of infection in rarefied areas at root ends of teeth and as to the method of getting rid of such infections, or the consequence of such infection".

A good X-Ray picture, accurately interpreted, is one of the greatest aids that we have in diagnosis. The X-Ray gives us information regarding structural detail of the mouth and especially regarding the periodental membrane and the thin white line of health that surrounds the membrane, the lamina dura. This white line indicates the compact bone outside the periodental membrane and forms the socket of the tooth. Once this is punctured, the bacteria have access to the spongy, or cancellous bone; thus, this acts as a barrier to infection. The rarefied area at the root end, indicates that an absorption of lamellae of the bone has taken place due to inflammation, which is usually caused by bacteria or chemical irritation. Where we see a small area, apparently walled off, and involving the root end, we are reasonably sure that it is a granuloma consisting of the same granulation tissue as is produced in other parts of the body under similar circumstances. The Bacteriologist

tells us that the size of the area is no indication of the number of virulence of the bacteria and that the virulence of the organism is secondary to the patient's resistance.

Sometimes we see an apparently eroded root end in connection with the area and we have reason to believe that fatty degeneration of the sac has occurred and the area may be the start of a cyst. At times, a rarefied area is seen on the side of the root, often of a vital tooth, this is likely a pericemental or lateral abscess and is a very definite focus.

X-Raying edentulous mouths, is now routine practice in handling focal infection patients. Thirty per cent. of these show some tooth, tooth particle, or foreign substance such as amalgam filling, broken instrument or bur, etc., or some other possible focus.

The majority of our patients presenting for examination of focal infection have one or more pulpless teeth in their mouths. Some pulpless teeth show conditions such as we have just discussed, others show a break in the lamina dura and no rarefied area but a so-called fuzziness around the root end and some show the lamina dura to be intact and the peridental membrane apparently normal, and thus we could go on with detailed X-Ray interpretations.

At times there is a disagreement, argument and contention regarding what to do with these teeth, and the patient is distressed.

Dr. Webser has dealt with this subject in about as positive a manner as possible in the light of our present knowledge, and I feel that his paper is of such importance that my closing discussion will be a summary of some of his points with a few suggestions added from the standpoint of the endodontist.

Summary

No definite rule can be laid down for all cases of focal infection, every case is an individual study.

A consultation between the dentist and the physician is the best way to give the case individual study.

The removal or retention of any pulpless tooth is very largely determined from the health of the patient and the condition of the peridental membrane.

The physician deals with the health of the patient and thus decides how radical the treatment must be.

The dentist deals with the peridental membrane and local conditions, which are determined by good X-Ray films, visual inspection, and palpation of the mouth, assisted by proper examining instruments, proper light and where necessary, transillumination and vitality tests.

At this time, it is decided whether the extraction should be simple, with the minimum of injury to the surrounding tissues, or whether difficulty is anticipated, and of what degree. All possible traumatism should be avoided in these cases. It is also decided whether it is wise to remove more than one tooth at a time, whether a general or local anaesthetic is advisable and whether the case should be done in the office or the hospital.

Experience has shown that where the patient is in very bad physical condition, the only safe procedure is a very cautious one. One tooth is extracted, and the reaction watched. The case is continued in a number of days, time depending on the patient's condition and on the reaction. Some of these cases react very violently.

"Too much hope must not be held out for the cure of a chronic disease by the removal of a long standing primary focus of infection. Thus, primary infections should be treated before secondary infections occur, and before essential organic tissue is destroyed."

"We have laid down the positive rule, which admits of very few exceptions, that all patients suffering from

active syphilis, tuberculosis, anaemia, rheumatism, endocarditis, diabetes, and acute eye affections, must not have left in their mouths, any point of infection, even if it involves the loss of every tooth. On the other hand, robust, healthy patients of good family history, may have many or all such infected teeth with a good peri-

dental membrane, treated with great comfort and benefit."

Other cases of focal infection often present very puzzling problems and in certain cases, we simply do not know what to do. The consultation between the physician and dentist will give our patients, the best advice in the light of our present knowledge.

Copper Amalgam as a Root Canal Filling

F. C. HUSBAND, D.D.S., TORONTO.

Read before Chicago Dental Society, Jan., 1928.

Mix the copper amalgam quite smooth by adding or expressing mercury as required. The mix should be firm—not sloppy. Carry a small piece to the mouth of the canal with pliers or amalgam carrier. Gently guide into the mouth of the canal with suitable plugger or small pledget of cotton in pliers, avoiding any suggestion of packing. Take plugger already selected with shoulder as above described, and, holding same with a very delicate grasp between thumb and finger, with one continued motion pass it through the amalgam right to the end of the canal, or until the shoulder engages the cavity margin at the point selected. Repeat this process several times carefully till you observe from the shoulder on the plugger that the amalgam has been built up about 1 mm. at the apical end of the canal.

Gently tamp a few times to adapt the amalgam and condense it. Repeat this process, building up 1 mm. at a time, till the desired amount, 3-5 mm., has been inserted.

Remove surplus amalgam with a barbed broach and fill the remainder of the canal with a combination of oxychloride of zinc cement and gutta percha as follows:

Having chosen a suitable gutta percha point—one as large as will pass freely into the canal—fill the rest of the canal full of a rather soft mixture of oxychloride of zinc cement and press the gutta percha point through it to the full depth. Wipe off the surplus with a hot ball burnisher and with suitable plugger, gently press warmed gutta percha point into the cement. This will bring to the surface globules of mercury which have escaped the barbed broach. These should be removed from the tooth.

In order to prevent discoloration of the crown or visible neck of the tooth, the root filling must be removed to a safe depth (4 or 5 mm.) rootwise of the gum margin with a bur in the engine, and the walls of this portion of the canal made perfectly clean. This must be done at the same sitting at which the copper amalgam is inserted. Replace this portion of root filling thus removed with oxychloride of zinc cement.

The placing of the gutta percha cone in a portion of the canal, as described, makes it possible to gain easy access to the canal for the insertion of a dowel—as in the construction of

a crown—should that be necessary at a later date.

A radiograph should be taken immediately after the copper amalgam is inserted and before the cement and gutta percha are inserted, to check up the work and to satisfy the operator that it has been placed where he wishes it to be. In the event that he has failed to get it to the end of the canal, it can easily be removed, because it is very slow in setting. Even after it is set, it is possible to remove it with a hot probe.

Copper amalgam can be successfully placed in any root canal where gutta percha can be placed, and just as easily. It has a decided advantage over gutta percha because of its proven germicidal qualities of a permanent nature.

Should a small excess be pressed beyond the apical opening, it will be found to be non-irritating, except in a mechanical way, on account of pressure. This is only temporary, however.

What shall we do with canals that can only be partially opened? The operator is faced with these quite frequently and they create a problem especially if there is an area of infection at the root end. If the following technique is carried out, results such as will be shown with the slides, will very often reward him. First, open the canal as far as possible with files, reamers, etc., and enlarge with a bur in the engine. With the assistance of the radiograph and a bright mouth lamp—such as the Cameron long-handled lamp—the use of which will be described later—carefully further open up the root using picks, files, reamers and a round bur in the engine, till it is decided that further progress would result in puncture of the root. Dress the canal with an agent like tricresol, and seal with an oxyphosphate or copper cement. This dressing should be changed periodically, and the treatment continued several months till the radiograph

shows the result to be satisfactory. The canal, especially if it be that of a posterior tooth, may then be filled full of copper amalgam, which will permeate the dentine to the root end and maintain a permanent antiseptic condition. Periodically check up with a radiograph, and it will surprise one to find how many of these canals are restored to health and a condition of safety.

What shall we do with the partially developed tooth with a large apical opening? Endeavor to develop a shoulder, as previously described, about 1 mm. from the root end. Extra large reamers will assist. Use as large a plugger as possible to engage the shoulder, and insert just enough copper amalgam to close the opening, checking up, as usual, with the radiograph. Leave this to set and add what additional amalgam is necessary at the next sitting.

Copper amalgam has been successfully used for a number of years as a root end capping following root resection, but it would seem a simpler and much more effective method to fill the apical portion from the coronal end, providing the canal could be opened.

On account of the germicidal influence extending some distance on all sides of copper amalgam, it would seem permissible to place the amalgam one-half mm. or so short of the apical opening rather than press it through. Such investigators as Clyde Davis, of Nebraska, have shown, chiefly in devitalization cases, that the peridental membrane closes over the apical opening and even deposits lime salts in the opening, thus effectively sealing it. Any operation, therefore, that would permit of this physiological repair, would seem to be acceptable.

The vulnerable portion of a root canal is at the apical end because of the difficulty of closing the foramen or foramina. Crownwise of these, the junction of the dentine and cementum

is, as it were, a fire wall—impenetrable, and forming a barrier to the ingress or egress of organisms. Therefore, at least one of three things, it would seem, must be accomplished in dealing with these foramina in order to make a root canal operation a success:

(1) Induce, if possible, physiological closure of these foramina. (Davis.)

(2) Mechanically obliterate (or fill) them.

(3) Maintain asepsis of a permanent character in that area without causing irritation to the periapical tissues.

Briefly consider these in order:

(1) Physiological closure. Copper amalgam placed close to the apical end of the canal, following careful preparation, will permit and not hinder this repair, because of its germicidal and non-irritating properties.

(2) Mechanical obliteration. This is well-nigh physically impossible, except in roots with a single foramen. A solution of rosin in conjunction with a gutta percha cone, cannot be relied on since the solvent becomes dissipated and leaves but a fraction of the original bulk in the spaces it was supposed to fill. Neither can precipitated silver or any other precipitated material mechanically obliterate. The deposit, at best, is a porous mass.

(3) Maintenance of asepsis. Since physiological repair is uncertain, as is also mechanical obliteration, various medicated filling materials have been depended on. The main difficulty encountered with these is that they sooner or later lose their antiseptic properties and themselves become infected, together with the surrounding tissues.

Not until Fraser's work in the University of Toronto on "A Study of the Efficiency of Dental Fillings," was the fact demonstrated that of all filling materials copper amalgam alone possessed permanent antiseptic properties.

This fact, together with the findings of Miller, quoted at the beginning of this paper, viz., that dentin from extracted teeth which had been filled with copper amalgam was not only sterile but had antiseptic properties also, placed copper amalgam in a very favorable light as an ideal material to use in that vulnerable portion of the root canal—the apical end—provided it could be successfully inserted.

It is not only very adaptable physiologically, and, what is important, impregnates the surrounding tissues with its benign antiseptic properties, making the surrounding dentine thus impregnated actively germicidal, but, above all, it maintains this condition permanently. Nature, then, must be relied on to regenerate the periapical tissues.

Clinical results have amply verified this.

(1) Teeth with large areas were kept under treatment as long as 18 months, or until the areas cleared up, then filled, and have remained clear.

(2) Teeth with large areas, some with sinuses, were given short treatment—during time of canal preparation—and cleared up after having been filled with copper amalgam.

(3) Teeth that had persisted in being tender for months under bland medical treatment lost their tenderness in from a few hours to a few days after the insertion of a copper amalgam root filling. This observation was made by several operators.

(4) Copper amalgam carefully placed over punctures in roots or in the floor of the pulp chamber gives satisfactory results.

Transillumination.

Since some teeth with copper amalgam root fillings and showing no areas in the radiograph, present a shadow on transillumination, some operators have condemned them to extraction because they have been told by the manufacturer of the lamp that these teeth are septic.

The following article, written by the essayist and appearing in *The Dominion Dental Journal* of July, 1926, may be of interest here:

Transillumination of the dental arches by the Cameron dentalamp is being somewhat widely used by dentists and physicians to detect diseased conditions about the teeth. The claim is made by the manufacturer that whenever a shadow is thrown through the gums when the light is placed behind the root of a tooth, that that shadow is a sure sign of infection of the tissues around the tooth, and that the tooth is a source of danger to the patient. Two conditions are mentioned where there is infection with no shadow, viz., in the case of an abscessed tooth with a sinus, or an abscessed tooth with drainage through the coronal end of the canal. The definite claim, however, as to the shadow, is that all teeth showing a shadow are infected, and all infected teeth without drainage show a shadow. What causes this shadow? The manufacturers claim that it is the precipitation of iron from the red blood corpuscle due to the toxic material from the infection.

Many dentists and physicians are now condemning all teeth with shadows—not dark or discolored teeth—but teeth showing a shadow on transilluminating them. Patients are being told that these teeth are bathed in pus and should be removed, and that this method is much more reliable than the radiograph. Investigation has shown that a considerable error exists in the above interpretation of the shadow. For instance:

Case 1—A lower molar was radiographed and showed a decided area, yet, on transillumination, was quite clear, though there was no external drainage.

Case 2—A lower lateral root was filled with copper amalgam, and the apical end resected and the surrounding bone curetted. The area filled in completely has been checked up annually

with radiographs, which show no sign of an area. Yet this tooth treated in this most thorough surgical manner and with every evidence clinical and radiographic in its favor, shows a shadow.

Case 3—An upper central incisor had had a sinus some years since. The sinus healed after treatment, by an operator other than the writer, but a dark spot remained to mark the place where it had opened on the gum. On transilluminating this tooth, that spot showed up almost black, yet one would hesitate to say it was a sign of infection in that gum tissue.

Case 4—An out-of-town physician sent a patient to Toronto to have four teeth extracted because they showed shadows. On radiographing the mouth, some nine teeth were found without vital pulps. The four marked for extraction because of the shadow, showed no area, while the remaining five, not marked, were found to have areas.

Case 5 (this is typical of many others tested)—Tooth without an area but showing shadow, was opened and put under treatment. Though treatment was persisted in, the shadow failed to disappear as the makers of the lamp claimed it would.

Case 6 (this case was not reported in this article but might be interesting)—Patient had a round blue spot on lower lip of many years standing due to being pinched with the forceps during the extraction of a tooth. On transilluminating the lip, this spot appeared almost black.

The question that confronts us is: What is it that causes the shadow? If it is iron thrown down from the haemoglobin, one might expect a shadow by inserting and sealing an iron or steel wire in a root canal. But this test does not hold good, for teeth without shadows do not show shadows when a steel wire is sealed in the root canal.

It would seem not unlikely that in certain cases some pigment becomes fixed in the tissues due to a previous

inflammatory condition, as might be illustrated by the discolored scar tissue mentioned in Case 3, but it would seem from our clinical records that the method of judging the condition of the tissues by the shadow, in trans-illuminating, is very unreliable as well as misleading.

A word as to cost. Many operators have stated that their patients cannot afford to pay for these root canal operations, therefore they extract. The essayist would suggest that these operators become familiar with the tech-

nique, decide on the fee necessary to deliver the service and then offer it to their patients—and at the patient's own risk—leaving the choice to the patient. The result will, in a very high percentage of cases, be gratifying to both patient and operator.

Permit me in closing, to emphasize the necessity for the most painstaking care in the preparation of the canal, in repeated medication—especially in infected cases—in the insertion of the filling, and in checking up the work as it progresses, with radiograph.

Saskatchewan Mouth Health Campaign

The Canadian Dental Hygiene Council is co-operating with the Saskatchewan Dental Association, to conduct a Mouth Hygiene Campaign throughout that Province commencing February 22nd, and continuing for sixty days.

The Saskatchewan Dental Association appointed a central Committee in Regina with Dr. A. J. Scott, as Chairman, Dr. L. J. D. Fasken as Vice Chairman, and Dr. T. I. Robb, Secretary-Treasurer. Sixteen Local Committees were also appointed throughout the Province, as follows: Prince Albert—Chairman, Dr. G. A.

Robertson.

North Battleford — Chairman, Dr. Walter G. Wilson.

Tisdale—Chairman, Dr. H. Adams.

Saskatoon—Chairman, Dr. Paul Winthrop, Dr. Ferguson.

Humboldt—Chairman, Dr. J. C. King.

Rosetown—Chairman, Dr. S. Moyer, Dr. M. J. McDonald.

Foam Lake—Chairman, Dr. R. H. Chant.

Yorkton—Chairman, Dr. J. D. Brass.

Grenfell—Chairman, Dr. C. D. Bricker.

Moose Jaw—Chairman, Dr. R. H. McDougall.

Swift Current—Chairman, Dr. G. L. Cameron.

Maple Creek—Chairman, Dr. Stewart Kennedy.

Estevan — Chairman, Dr. F. R. Graham.

Assiniboia — Chairman, Dr. G. L. Kroshus.

Weyburn—Chairman, Dr. Brimmacombe.

Shaunavon—Chairman, Dr. J. E. Fraser.

In many towns the interest was so keen that laymen were added to the organizing Committee. In one town the Mayor is Chairman of the Local Committee. In another a School Inspector, and in a Third, the Medical Officer of Health.

A tremendous amount of preliminary organization work has been accomplished by these Committees and Dr. H. S. Thomson, Field Officer of the Canadian Dental Hygiene Council who arrived in Saskatchewan a month ahead of the Campaign and visited every centre to go over plans with the local Committees. He will

remain till the Campaign is completed.

Splendid co-operation is being received from the Provincial Government, especially the Departments of Health and Education and School Hygiene, the Red Cross, the Saskatchewan Medical Association, Home and School Clubs, Welfare Organizations and Service Clubs.

The Canadian Dental Hygiene Council have prepared two new booklets for this Campaign entitled "At the Gate," and "The Joy of Living." Through the generosity of the Canadian Life Insurance Officers Association—50,000 of these are being printed in colors, for free distribution.

The Council are also providing a supply of Posters and a number of Motion Picture Films.

The Saskatchewan Department of Health are supplying 50,000 booklets—10,000 of which will be printed in the Ukrainian language for distribution amongst these people. The Department of Education are supplying 60,000 Mouth Inspection Blanks to be used by the Dentists in making School Dental Surveys. The Director of Publicity of the Saskatchewan Government is sending out to the 160 weekly Newspapers of the Province, a series of Bulletins on Mouth Health which will call the attention of the people to the Campaign.

In addition to printing and supplying of material, the Department of Education are sending out letters to 500 School Principals of the Province, giving full information of the Campaign, and asking their support. The Department of Health also are writing to the 372 Health Officers throughout the Province, asking them to get behind the movement, get in touch with the local Committee, and do all they can to assist.

In addition to the educational Campaign, a travelling dental Clinic has been arranged for to visit out-

lying districts and supply free treatment where needed. Dr. Lillis will be the Dentist in charge and will commence his duties about February 13th, working through the Red Cross and Government Outpost Hospitals. The Canadian Dental Hygiene Council will pay the Salary and travelling expenses, the dental equipment is being supplied through the generosity of the Ash Temple Company. The Dental Supplies are being donated by the Red Cross, and maintenance and quarters in outpost Hospitals will be provided for by the Department of Health and the Red Cross. Through the combined efforts of all these organizations, it will be possible to carry on this free service for sixty days.

Dr. Thomson's reports to the Executive of the Canadian Dental Hygiene Council, state that he is receiving the fullest support and co-operation of every individual and organization in the Province and he speaks most highly of the tremendous amount of work accomplished by the Dental Committee under their hard working Chairman, Dr. A. J. Brett. With such united effort and enthusiasm the Campaign cannot fail to be a great success.

Success will mean much to the future of the Mouth Hygiene Movement in this Country. The important effect that Dental Disease may have on the general health is becoming more widely known, and this Campaign is being closely watched by Governments and Organizations such as Life Insurance Companies who are interested in promoting the health and well being of the Community. They will gladly support our cause if we can show results in educating the public in the prevention of dental disease. Dentistry itself will reach a higher plane in public esteem through giving this humanitarian and self sacrificing service.

DENTAL SOCIETIES

All Spouts to One Funnel

That the practice of dentistry in British Columbia must be conducted by a member of the College of Dental Surgeons and cannot be carried on by a corporation, was the contention of the provincial taxation department in the appeal, which was dismissed by the Court of Appeal, of Painless Parker from the Vancouver Court of Revision.

Instead of \$16.17, which he calculated, Painless Parker is required, as a result of the court's decision, to pay \$2502 tax on a net income in 1923 of \$28,200.

For 1924, on a net income of \$30,974, he pays \$2779, instead of his own figure of \$253.17.

How Spouts Converge

"After reading the evidence, I find myself in accord with the findings below," said Mr. Justice Galliher. "The scheme adopted is (I do not say wrongfully) but very cleverly worked out in its many ramifications; but my opinion is that the various spouts converge into one funnel and the receptacle at the end is Painless Parker, disguised, it is true, under more than one alias, but Painless Parker, nevertheless."

For 1923 Painless Parker returned his gross income from his Vancouver business at 140,000, from which deductions were claimed amounting to \$137,000. For 1924 the gross income was returned at \$149,000 and deductions amounting to \$139,000 were

claimed, apart from rebates, which were allowed including a life insurance premium of \$6709.83.

The court of revision upheld the provincial taxation department in disallowing of \$21,365 in 1923 and \$19,994 in 1924, paid as rental of equipment to the Associated Dental Supply Co., Ltd., a California corporation in which Painless Parker's wife held 750 of the 753 shares issued. The equipment rented was valued by the Dental Supply Co. at \$30,457.

Department Upheld

The court of revision also upheld the department in disallowance of amounts claimed for "Home office expenses," \$9747 in 1923, and \$9014 in 1924, these being a proportion of the expenses of the San Francisco office which manages Painless Parker's thirty-four offices, all of which, except the Vancouver office, are in the United States.

In place of a claim for home office expenses, the department allowed a sum for general supervision.

Much evidence was taken in San Francisco and Vancouver regarding the relationship of the Painless Parker business at Vancouver to the Associated Dental Supply Co., and other organizations using the Parker System of Dentistry.

Mr. C. G. Beeston was counsel for Painless Parker, and Mr. George A. Grant for the taxation department.

Montreal Dental Association

The monthly meeting of the Montreal Dental Assistants' Association was held on Monday, January 16th, 1928, at 8.30 p.m., at the McGill University Dental Faculty. Following the regular order of business, Dr. F. H. Baxter, Professor of Operative Dentistry, McGill University Dental Faculty, chose for his subject, "The Problem of the Infected Pulpless Teeth and Its Treatment by Ionization." The essayist pointed out some of the results neglected in diseased teeth. Then the problem of deciding what teeth were advisable to save. The technique of

ionization was thoroughly gone into, a series of very interesting slides of practical cases were shown demonstrating that one is confronted with several phenomena, and the necessity of getting these all properly filled.

Dr. George S. Cameron, Professor Prosthetic Dentistry, McGill University, and Dr. J. S. Dohan, Associate Professor Prosthetic Dentistry, assisted Dr. Baxter with the slides.

In conclusion a hearty vote of thanks was given by Miss E. Moyer to the essayist and his assistants, seconded by Miss M. McLean.

Manitoba Dental Association

Dr. H. J. Merkeley, of Winnipeg, was re-elected president of the Manitoba Dental Association at the annual dinner and meeting held at Fort Garry hotel, when officers were elected, and matters pertaining to the future of dentistry in the province were discussed. About 100 members of the profession in the province attended the dinner, and the meetings which were held throughout the day.

Chief among the speakers was Dr. R. O. Schlosser, professor of prosthetic dentistry at the Northwestern University, Chicago, who is in charge of a dental clinic which constitutes the greater part of the annual meeting of the association. The clinic was in operation throughout the day, and will be continued today. At the dinner Dr. Schlosser discussed recent progress in the profession.

The officers elected were: president, Dr. Merkeley; vice-president, Dr. E. H. Clark, of Minnedosa; secretary, Dr. J.

F. Morison, Winnipeg; registrar-treasurer, Dr. W. W. Wright; board of dentists, Dr. Wright, Dr. D. A. McCarten, of Winnipeg; Lt.-Col. H. A. Croll, of Souris.

The Calgary School Board is discussing the problem of adding ten or twelve dentists to the present staff of two to cope with the work to be done. It is a straight question of state dentistry or private practice.

La Patrie, Montreal, published a half page cut of the new University of Montreal on January 21st. Six millions of dollars will be spent in the buildings, which will be located on the mountain on site of 200 acres. Work will begin June, 1928, and be completed 1930. Both medicine and dentistry will be moved to the new buildings. The buildings will be 1200 feet by 700 feet with a main tower in the centre 175 feet high.

Ottawa Dental Society

The January meeting of the Ottawa Dental Society will go down in history as one outstanding in many ways and replete with good fellowship and enthusiasm.

The meeting was the occasion of the entertainment of the medical members of this profession as guests of the Ottawa Dentists, and our medical friends graciously accepted our invitation by attending the banquet in large numbers.

There were about two hundred and ten members of both professions in attendance at the Chateau Laurier dining room on Monday, January 16th, 1928.

Dr. A. E. Webster of Toronto was the chief speaker, who dealt with the

subject of "Focal Infection". Dr. Webster handled the subject in his usual able manner and was complimented by many of those present for his solution of many difficult problems which have perplexed both professions.

The discussion was opened by Drs. Campbell Laidlaw, and Patterson for the medical profession and by Drs. Bradley and Coupland for the Dentals.

The meeting was a most enthusiastic one and our society was highly commended for its hospitality.

The paper by Dr. Webster and the comments by Drs. Laidlaw, Patterson, Bradley and Coupland, will appear in other columns of this publication.

W. C. M.

Edmonton Dental Society

Edmonton, Alberta, Jan. 9, 1928.

Dear Doctor:

In order to break the monotony of the remaining winter months, the Edmonton Dental Society has arranged a get-together meeting for dentists of Northern Alberta, to be held Monday, January 30, at the Macdonald Hotel.

This will be as per our first letter—clinics, banquet and informal dance. We have engaged the palm room at the hotel and Bowman's Orchestra, so can guarantee a good time.

Every dentist is entitled to invite a couple of his friends to the dance.

Up to date we have definite prom-

ises of fifteen local clinicians to put on their little demonstrations, headed by Dr. De Renzy, of Calgary, on cleft palate and obturator work. These clinics will take in orthodontia, amalgam, inlay (team), full denture (team), porcelain, wire and pins, fractures, impressions and other parts of dentistry.

We want you to mark this date on your book and be with us without fail. Your interest in this will indicate to us whether we can proceed to plan bigger and better meetings.

Yours truly, W. S. Hamilton, Secretary-Treasurer (400 Tegler Building).

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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Vol. XL

TORONTO, FEBRUARY, 1928

No. 2

Federal Research in Dentistry

Few realize what the people of Canada spend on dentistry annually. There are more than three thousand five hundred dentists in Canada who, roughly speaking, collect three thousand dollars each which means a public outlay of over ten million dollars a year. A calling which has a ten million dollar annual turnover is large enough to get public attention. Canada's trade with some foreign countries is not much more and yet it receives a good deal of attention from the government. There are businesses whose turnover is much less and get encouragement in the way of tariff protection and assistance to solve their business problems. Thus as a business proposition dentistry might rightly ask for help which would make it possible for its members to give a greater amount of service annually. In this argument we do not include the possibility of increasing the health of the nation.

The Speech from the Throne the other day intimated that the Dominion Government intends to spend a large sum of money in industrial research as well as scientific research. This is a straight business proposal which is expected to bring good business returns.

Mr. Ferguson, the Premier of Ontario, has also said that his government is ready to give a million dollars under certain conditions for the advancement of scientific research. The idea of research is very vague in the minds of most people. They think of someone in a poorly lighted garret and half fed working away with decoctions that will turn a cheap element into an expensive one or aiming to circumvent death. The notion of the government is to devise new and better methods of doing things. Why should every motor car manufacturer make every portion of his car so that no part of it is interchangeable with the same part in any other car? The bureau of standards at Washington is aiming to standardize all parts of like machinery, all shop practices and all methods of sale and distribution. It is this very thing that should be done in Canada under the power of the government.

Since the people are spending such a large sum of money on dentistry they should demand that it be so organized and conducted that the greatest returns possible should come from the money spent. Even with such an expenditure it is said that not more than twenty per cent. of the people can afford modern dentistry. No one today would argue that dentistry is not a necessity. In view of these things there might well be instituted a research which would reduce the cost of dentistry to the people. This could be done in several ways. Reduce the cost of a dental education. Reduce the cost of dental equipment, furnishings, appliances and instruments. Reduce the cost of dental materials. Increase the output of the dentist by trained assistants, efficient office management, uniform and accurate operative procedures, and in hundreds of ways not now dreamed of.

An efficiency expert would find a virgin field in dentistry. The only portion of the subject which has received any attention on the economic side is office management, increasing fees and collecting accounts. No clinics or demonstrations are given to show how expeditiously an inlay can be set, or an amalgam filling inserted. Judging from demonstrations and lectures one would think the only pleasure dentists have in their work is in its perfection and not in its service.

Black classified cavity preparation and instruments but did not classify operative procedures in therapeutics or the arrangement of either instruments or equipment. In some departments of manufacturing, sale and distribution the cost has been reduced as much as 60% by the bureau of standards assistance. When a similar department is established in Canada we hope the Dominion Dental Council will have so impressed the need of economy in dental practice on the department that provision will be made for aggressive work. Such work is of world-wide interest.

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CORRESPONDENCE

DOMINION DENTAL COUNCIL OF CANADA

Regina, Sask., Jan. 1, 1928

Dr. A. E. Webster,
Editor Dominion Dental Journal,
Toronto, Ont.

Dear Dr.

In the last issue of the Journal you made some references to the Dominion Dental Council which I think were very timely and of considerable value. Permit me now to say that it looks to me as if the Dominion Dental Council is about to reach that point of usefulness for which for twenty-four years we have been hoping. As you know I have been Secretary for a quarter of a century. Many a time I have experienced misgivings. Always, however, hope kept us going.

The Dominion Dental Council and the Canadian Dental Assn. were started at about the same time. Each had its own work to do. It was wholly inadvisable for the former body to, in the slightest, trespass upon the work and duties of the latter. The duties and sphere of the Dominion Council were clearly defined. It has always seemed to me that the duties of the latter were not sufficiently well defined to enable it to function satisfactorily.

During the last few years the Council has been laboring under great difficulty. We were supposed to have a standard of examination slightly higher than that of any of the Universities whose graduates we had to examine. But the time came when some of these Universities found their standard was not high enough. Some of them acted on the discovery quickly. Some of them did not. Now where was the poor Council? Between the devil and the deep sea. If we raised our standard up to

that of the new high standard we would cut out all those Universities which did not come up to that standard. We would be cutting out more good Canadian Universities than we would be recognizing. Then where would our term "Dominion" come in?

The Council could of course give its moral support to the movement for a higher standard. This it has done. But the active, aggressive support as we understood it was within the sphere of the Association.

It is my belief, and I think the Council shares it, that the Universities, being teaching bodies, should know more about education than ordinary laymen. Therefore, let those teaching bodies get together and themselves decide upon a standard which will be accepted and can be enforced throughout the Dominion. Having decided upon this standard the Council will throw its entire weight behind any province where its assistance is needed to make it effective.

As I understand it they have recently met (I hope I am not wrong in this) and have decided upon a standard. If this has been done the troubles of the council have been ended for we will then be able to deal with each province as if it were equal to any and every other province—a real Dominion standard, and can enforce our rules without any discrimination. This latter has recently been our danger.

Now that it appears that one of the chief stumbling blocks is practically removed it might be well for all concerned in the D.D.C. to proceed to make it better than it is. One of the biggest obstacles is easy of removal if only our Board of Examiners would each and all decide to do



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as most of them do. This is a big Dominion and if we are to succeed in doing business in a satisfactory way we have to act with business promptness when dealing with Dominion matters.

Our Board of Examiners should consider it an honor to be placed on that Board. Some of them do. The result being that when they receive papers to value they attend to their duties promptly and make returns promptly. If nine of them do that and one lags, the whole examination is held up, the good business of nine completely nullified,, dozens of students held in suspense and at great inconvenience and expense, and all because of one man. As secretary I can only say I must have more promptness from some of the examiners or I cannot make the Council succeed

from a secretarial point of view.

Finally, the number of requests now being received from practitioners in B. C. would indicate to me that at least some of the men there are beginning to realize that the D. D. C. has a national value to B. C. as well as to the rest of Canada.

Sincerely yours,
W. D. COWAN,
Sec'ty D.D.C. of C.

P. S.—If the Canadian dentists wish the Council to undertake greater duties let them say so. We will not trespass on the rights and duties of others but we will do our best at what we are delegated to do. A clear definition of the duties of the C.D.A. and D.D.C. is advisable.—
W. D. C.

Dental Dept.,
Gen. Hospital,
Winnipeg, Man.
January 17, 1928.

Dr. A. E. Webster,
Dental Faculty,
University of Toronto.

My Dear Sir,—

Enclosed please find:

1. Photograph of extensive abrasion of teeth. Upper incisors were chiselled into thin edges; molars were worn in a concave-convex manner. History, relative to teeth, of exten-

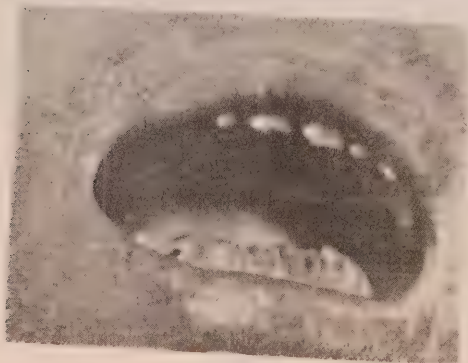
sive neuralgia pains. Patient had habit of continually chewing something or other whilst working in the fields at his farm work.

Impacted central removed Thursday, January 12, 1928. Edentulous case. Crown of tooth was upwards; root towards gum margin.

Note: Deposit on enamel accompanying radiograph taken after extraction.

With best wishes for the New Year.

Respectfully,
Anne S. MacKenzie.



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Western Dental History

(Continued from November)

It would be on a par with its other illegal acts. Nowhere in the law is power given to distinguish between them. Once the Government interpretation is accepted, every foreign college reputable or disreputable can have its diplomas registered in the Territories and neither the Government nor anybody else can indicate a line of the law which confers the power on anyone to distinguish between them. Produce it if they can and I will publicly apologize.

Yours respectfully,

W. D. Cowan.

It would not be a complete statement of the acts of that period if I did not refer to some of the Ethical principles which governed us. One of the rules we made read "Any officer of the Association who may use his office as a means of gain either directly or indirectly, either by word, advertisement or other action, whereby he hopes to gain patronage, thus taking an undue advantage over his fellow practitioners, shall be held to have violated the fraternal spirit of this Association, which violation shall render him liable to expulsion from office." And then another rule, "Whenever a charge of immorality is made against an appli-

cant for registration under the Dental Ordinance it shall be the duty of the Secretary to report the same to the Board of Examiners and to refuse to register the applicant until instructed to do so by the said Board. Should any licensee under the Ordinance be proved guilty of any immoral conduct his certificate may be annulled or suspended in the discretion of the Board."

I doubt if the Ordinance gave us power to do this but we bluffed it through and quite a number of these fellows who improperly invaded our Territory were held considerably in check by fear of what a rather aggressive Board might do to their reputation if they departed from the straight-and-narrow path.

We did our best in those very trying days. We believed we were doing right. We thought we had to fight—and the way the boys stood shoulder to shoulder was, and is, I think, a tribute to them. They followed a clearly defined policy. "Never go to the public unless you have a complete case. Get that and then hit hard."

Today we are proud of our profession here. You are no prouder of it than I am. (Concluded.)

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Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

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73 Richmond St. W., Toronto 2.

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Dominion Dental Journal

Vol. XL

TORONTO, MARCH, 1928

No. 3

ORIGINAL COMMUNICATIONS

Mechanical Correction of Cleft Palate

BY THE METHOD OF THE LATE DR. CALVIN S. CASE, OF CHICAGO.

A Paper by H. W. de Renzy, D.D.S., of Calgary, Before the Edmonton Dental Society.

Mr. President, and members of the Dental Society: The title of this paper is "The Mechanical Correction of Cleft Palate, by the Method used by the late Dr. Calvin S. Case, of Chicago." I do not think it will be amiss to give you a brief introduction to the man whose contribution, in his particular line, is recognized as authority all over the country, and whose personality was as interesting and unique as his work. Dr. Case was a man of wide travel and culture; he interspersed long periods of intense work with journeys to all the known beauty spots of the world, and to him, Lake Louise had no peer. "I have travelled pretty far and wide," he said, "but I have seen no place as beautiful as Lake Louise."

At the time of my first contact with Dr. Case in 1921 he was 74 years old, and suffering from that dread disease, cancer. While he had introduced his new correction for cleft palate in its first form before

the National Dental Association of America, in 1902, and had told of its development before the International Dental Congresses of 1904 and 1914, he was very jealous of his skill, proud of his achievement, and quite antagonistic to taking any one into his office to actually watch the construction of his device. When a combination of factors—chance, the intercession of a friend, and possibly the fact that he was going on the operating table in a few days—led Dr. Case to allow me to see him at work, I was very nervous, having been warned how easily his hostility could be aroused. I tried to gather all my faculties together in terror lest I should make some faux pas. But, as I watched his marvelous skill—triumphant over age and illness—the tension gradually relaxed, and I forgot myself entirely in the interest and fascination of watching his technique.

When we were better acquainted, he recounted his first interest in this

phase of dentistry. He got into trouble remaking a Kingsley velum. To aid in packing the rubber, he put the metal moulds on to warm them up. But when he turned around again he found the moulds, which were made of type metal, had melted, and, as he said, he "sweated blood." He was a man of intense energy and great inventive genius, however, and he set to work to repair the damage. He got his models in plaster paris, and metal models by using moulders' sand. And gradually taking its inception from that simple accident, the present Case Obturator, very aptly described by Dr. Truman Brophy as the "floating palate," was developed.

In trying to give you an idea of this kind of cleft palate correction, it is desirable, first, to recall to your mind the position and character of the velum palati and muscles involved in the articulation and resonance of speech in normal conditions, and then to show how the Case method achieves these normal conditions, in cleft palate cases. Those who have had experience in correcting this deformity have recognized the importance of producing, whether by surgery or artificial means, a condition which will perform the function of the normal palati. I may say, at this point, that much of what follows is an editing or summarizing of what you will find in Dr. Case's writings on Cleft Palate.

The velum palati is of uniform thickness, the average measurement being estimated at one-fourth of an inch. When this muscle is cleft, the muscles that tend to widen the fissure are the levator palati, which crosses the palati obliquely from above, downwards and inwards, lying nearer to the posterior than the anterior surface—and the tensor palati, which turns around the hamular process and to the median line, in a nearly horizontal direction.

The most important function of the velum palati is the involuntary ability to completely close the air passage to the nose, which, in the relaxed state is open for free breathing. Yet in the perfect speaking of all oral elements of the vowels and consonants except in m, n and ng, this closure is absolutely necessary. The complete closure of the naso-pharyngeal passage is needed to enable the vibratory air blasts, after leaving the vocal cords, to be completely and forcibly directed through the oral cavity, where they are moulded into speech by the action of the tongue, the palate, the teeth and lips, and all the muscles which have the power to change the size and form of this wonderful channel.

Another important requirement is a sensitively free mobility which will quickly respond to rapid muscular movements needed in speech, even to the extent of a vibratory activity, which is necessary to perfect resonance. This quality of voice, known as resonance, is quite as important as enunciation, and bears the same relation to the mechanism of speech as the resonating quality and volume of tone bears to the character of ~~the~~ instruments. When the normal velum palati is stretched to a drum-like tenseness in the performance of its function of closing the naso-pharyngeal passage, it becomes a perfect transmitter of voice vibrations to the true resonating chambers of the head. The veil of the normal palate, in this important act, extending almost directly backward from the hard palate to meet the superior pharyngeal muscle, places it at nearly right angles to the voice blasts and consequently in a favorable position to directly receive and transmit their vibratory activities.

It will be seen that this peculiar transmitting quality of the velum palati is of the greatest importance, when we realize that in nearly all parts of speech not a particle of vi-

bratory air itself can be allowed to pass into the nasal chamber, as it not only impairs tone, changing it to a nasal quality, but diminishes the power necessary to send the voice blasts into the oral cavity with sufficient force to distinctly enunciate the explosive and aspirate elements of speech. For instance, in the sharp distinct utterance of the explosive oral elements of b, d, t, etc., there must be a compressed accumulation of air back of full stops with a sudden explosive emission, as in pronouncing boy, toy, do. Again, in the aspirate oral elements s, sh, ch, etc., the air must be forcibly expelled through constricted openings with a sibilant or aspirate breath sound, as in pronouncing see, shame, church, etc.

The defect in nearly all artificial palate work—aside from cumber-someness and the need of a plate or dental fixture—was a rigidity which prevented the activity of movement necessary to perfect speech, as just described above. Of all the forms of obturators and artificial palates before Dr. Case perfected his method, the well-known Kingsley velum was the most successful, because the freedom of movement of the veil made the acquirement of speech a simpler and less difficult matter, and, were it not for its failure to meet other equally important requirements the Kingsley velum would stand today the ne plus ultra of all artificial palate work.

How happily the Case obturator meets the normal requirements of articulation and resonance, is revealed in a letter of Dr. John B. Murphy, the well-known surgeon of Chicago, whose testimony is supported by many nationally famous surgeons and dentists. Dr. Murphy writes: "Your patient not only spoke well, but with perfect enunciation and tone, but seemed to be unconscious of the palate in her mouth, in any position of the head. And, though not at-

tached to a dental plate, which I had supposed was always necessary, it seemed to rest securely in position, responding in every detail to the movements of the muscles of speech, deglutition and inhalation, just as though it were the natural palate and velum. Its motion really seems uncanny, it is so natural."

Perhaps the unique and outstanding characteristic of the Case velum obturator, is that, in its typical state it does not require a supporting plate, but is sustained by its perfect fitting palatal and nasal extensions, and the relation of the veil to the walls of the pharynx. This dispensing with a plate is a matter of great convenience and health to a patient, and, with the relation of the veil to the walls of the pharynx, permits a close imitation of the natural activities of the normal velum palati, enabling distinct articulation and the resonance of perfect speech. In this it is aided by its exceedingly light weight, made possible by using hard black vulcanite, finished to the minimum of material for form and strength, which is a large factor in permitting a quick response to the slightest muscular movements which hold it in their grasp, thus producing a close imitation of normal activities.

The thin wafer-like central portion of the obturator takes the same position in relation to the direction of the vibratory voice blasts, as does the normal veil, this being perhaps the outstanding reason for the perfect resonating quality of the voice in this method of treatment.

A brief description of the technique employed in making one of these obturators, with models for illustration, and a citing of my own experience with two or three patients, will give you the clearest idea of Dr. Case's work.

Immediately following this interesting paper, Dr. De Renzy took up the making of a Case obturator step

by step, giving in detail the technic of mouth examination, impression taking, flasking and finishing. His clinic exhibited models of finished obturators in position giving his audience a clear comprehensive idea of the construction and use of this interesting and extremely useful appliance. Dr. De Renzy has to his credit the actual practical construc-

tion of cases which have been instrumental in instilling hope in the breasts of mature individuals, whose ambitions were seriously hampered through the terrible affliction of cleft palate. Enunciation of even ordinary words was extremely difficult until fitted with a Case obturator. The clinic was unique and well received.

Emergencies of Practice Met With in Oral Surgery

FULTON RISDON, M.D., D.D.S., F.A.C.S., LONDON DENTAL SOCIETY, Nov. 15, 1924

Synopsis:

1. Accidental openings into the antrum of Highmore at the time of extraction.

2. Abnormal bleeding following extraction.

3. Fracture of the mandible during extraction.

4. Breaking of needles for nerve-blocking.

5. Swallowing or aspirating foreign bodies.

6. Infection following extraction (a) due to faulty technic.

7. In what cases should one curette following extraction?

In considering emergencies we should recall them in their order of frequency, and I imagine the most common is opening into the antrum of Highmore at the time of extraction. Roentgenograms may or may not have been taken, but we all know that the apices of the bicuspid and molars may reach up to the floor of the antrum, and if any infection occurs may perforate this so-called floor of the antrum. Sometimes when extract-

ing, a small portion of the floor may come away with the tooth. The treatment, therefore, must vary, as the infected case will have much more discharge and will take longer to heal. If there is no infection, I believe that little or no treatment is necessary, and certainly packing with gauze or probing should be avoided. If any loose pieces of alveolar process can be seen or felt they should be removed, but avoid irrigation, packing, etc. In the infected cases, the opening should be examined for necrotic bone, and if it is necessary to remove this diseased bone, the opening will have to be enlarged, followed by a few irrigations. I say a *few* irrigations, because if the opening is large, free drainage occurs and no irrigations are necessary except to make the patient more comfortable, and frequently hot mouth washes accomplish the same results. A root pushed into the antrum may be recovered, enlarging the opening and irrigating,—but one must remember that sometimes these openings do not close. Another method used to recover a root is to make an opening in the canine fossa and see it with

direct light; and before closing this incision a second opening is made into the nose under the inferior turbinate to allow drainage for a few days. Some rhinologists believe that an opening should be made immediately into the nose where the dentist has accidentally opened through the tooth socket, maintaining that if this is done early the mouth opening will always close. I believe this is good treatment, but it is a bit heroic and discredits the dentist in the eyes of the patient. Neither is it imperative as the majority of these accidental openings will close, and if they fail to close, a plastic may be done subsequently.

Hemorrhage following extraction, where the patient has lost considerable blood, is a real emergency. The usual treatment is packing with selvedged gauze soaked in a styptic, such as adrenalin chloride, but in some cases this does not suffice. I have been called where the general surgeon and the dentist having used every styptic the patient continued to bleed. This has also been my own experience with the use of drugs. I have almost discontinued their use where the patient has been bleeding any length of time, and at once apply pressure with the dental compound and rubber dam. I apply a bandage under the chin and over the head, and in this way maintain pressure on the compound between upper and lower jaws while the patient sleeps. Occasionally blood transfusions of 10cc of a 5 per cent. intra-venous calcium chloride is indicated to aid in the clotting, but this is seldom necessary in women, as hemophilia is a disease transmitted through the female to the male and seldom influences the female. I was recently called upon to operate on a young woman of 19 years of age, and the mother told me she had lost three sons from minor operations—all bleeders. The clotting time was tested for this young woman and found normal, and at operation the hemorrhage was

not excessive, but the history of the family was not comforting, to say the least.

Another condition which brings grey hairs to some of us is a fracture of the lower jaw following the extraction, say of an impacted molar. If you recall for one moment the anatomy of the part, how the body of the mandible joins with the weak ascending ramus and is further weakened by a large molar tooth in the thinnest part of the bone, leaving only two plates of compact brittle bone as a support, one wonders why these fractures do not occur more frequently. The reason for this is that the dentist is a careful and skilful operator and is seldom guilty of using too much force. The cause of fracture when it occurs, then, is that force is applied before the tooth is exposed in this weakened angle of the mandible. If this accident occurs, what should we do? It will be necessary to inform the patient, but this can be done very gently, at the same time assuring the patient that it will soon be all right as they are very easy to treat, but that he will suffer some inconvenience at mealtime. I would say, always apply some first-aid treatment even if it is useless, as it satisfies the patient for the time being—such as a bandage or some interdental wiring, and ten grains of aspirin to be repeated two or three times at four-hour intervals. At the first opportunity, good X-rays should be obtained—if possible, taken in stereopticon, but failing this, always in two positions, and using the large plates rather than the small dental films. A plate taken in one position may be difficult to read, but supplemented by another position the condition may be obvious. It will be necessary in most of these cases to use some form of splint; and it is to be remembered that nearly all these fractures occur posterior to the teeth, consequently the short fragment, the ascending ramus, is not easily controlled without

closing the mouth. This will necessitate some interdental splint, and the simplest of all is the so-called United States Army method, where the medium bronze angle orthodontia wire is made into a small loop and twisted once or twice, the two ends of the wire are gently forced from the labial side through the interspace between the two bicuspid of the upper jaw, and lingually one wire passes forward around the first bicuspid and out through the interspace between the bicuspid and cuspid. The other end is carried distally around the second bicuspid and comes through the interspace between this tooth and the first molar, then the two ends are twisted on the labial surface. By that means the loop is held securely between the two bicuspid in the upper jaw. A similar loop is arranged for the two bicuspid in the lower jaw. Loops are then placed at various intervals in the upper and lower jaws, and being opposite each other, can be ligated together with silk when you so desire. This is a very simple appliance, easily introduced and inexpensive.

Another form of splint is the so-called Hammond, constructed by taking an impression of the upper and lower teeth and then casting with Victoria metal a thin facsimile splint. In all these cases the occlusal surface of the wax is cut away before casting, and a small 22-gauge wire soldered at the gingival margin of the splints—but the wire only caught in spots. That really means that you have an orthodontic arch, upper and lower, held in position by these thin splints, and wire or silk can be used to bind them together. The posterior fragment of the fracture must be moulded into position when you close the mouth, and it will remain in that position if the jaws are held in opposition. No anaesthetic is ever necessary. Now many other splints can be made, such as the interdental rubber splint, but I only mention it to condemn it for the reason that it is seldom possible

to see the occlusion of the teeth, which is your only guide, it is too bulky and frequently it necessitates an anaesthetic. Please note that it is never necessary to extract a tooth for feeding purposes, as the diet is egg-nogs, malted milk, milk and water, soups, fluids, mashed potatoes, etc. This appliance is to be worn for three to five weeks.

Now let us consider the breaking of needles at the time of injection for block anaesthesia—generally speaking, it occurs at the hub of the needle and leaves a section of needle in the internal pterygoid a little over an inch long. Whether you should tell the patient or not I will not discuss as it might weary you, but at any rate I believe in most cases they do little or no harm; but medico-legally they are better removed. I have felt for some time that a modification of the so-called Smith technic of injection is safer unless you use platinum needles—and they will occasionally break. By this I mean that the swaying of the needle after being introduced in the tissue should be reduced to a minimum.

In attempting to remove these, I have found them much higher and deeper than I expected, and an incision must be planned to bisect the needle in the tissue. That means that the incision is made at right angles to the needle and about half an inch posterior to the anterior surface of the ascending ramus. From now on it is fishing, and we wish you fisherman's luck—if that is always good luck. This can be done in most cases under local anaesthesia if you are the first to try and the patient is not too nervous. Apparently no bad results are to be expected other than lawsuits or large-sized claims.

Occasionally a Kerr broach slips and passes either into the bronchial tree or into the stomach. If into the bronchial tubes, it may be coughed up, or, better still, it can be removed with a bronchoscope—a long tube

with an electric light on either end—but if it enters the stomach it should be followed day after day (and it usually takes about four days to pass by the bowels), with the fluoroscope, for fear it might come to rest in the lining of the bowels. If this occurred the patient should be opened to prevent peritonitis or other inflammatory conditions. The diet given these patients is mashed potatoes and dry bread, avoiding purgatives of any nature.

Let us consider infections following extractions. It is my firm belief that the so-called infected areas are largely due to lysol and other strong antiseptic solutions in which the needles are kept, and it is sloughing rather than infection. To avoid these and straight infections, all needles must and should be boiled for five minutes at least, and the syringe may be kept in alcohol if you so desire.

The above has to do with changes in the soft tissue, but in the bone one should never open up fresh areas in acute bone infections unless walled off by round-celled infiltration. We are talking of one of the stages of inflammation, and you will recall that Nature first quickens the circulation, then retards it, and during this stage round-celled infiltration occurs, so that in an abscess or boil the entire area is surrounded by round cells, and this is Nature's barrier. Now if you are too hasty and operate before this occurs, or break it down with a

curette after it does occur, you will likely distribute the infection as the blood vessels in bone are very numerous and have scarcely any wall—slightly more than just channels through the bone.

Now this brings up curetting—should it be done? In all cases where the X-ray reveals small areas, likely infected, in the bone, I would say no most emphatically, and never in acute cases. I firmly believe that most of these small areas will be absorbed, and if not, they can be removed at some subsequent operation more safely. I am speaking now of small areas. In the larger ones a sac has formed and it is likely necessary to remove this sac, but in so doing a moderate exposure must be obtained and never through a tooth socket, as it rather resembles the classic camel through the needle of the eye as we literally view it. To do it, all that is necessary is to remove a small section of the buccal or lingual plate of the alveolar process with a biting forcep, and with a fair-sized spoon curette—never a dental burr—gently remove the sac, leaving intact a small, clean, bony wall, which is Nature's barrier. I believe that we should always keep in mind that it is a sac or a loosened piece of bone that we intend to remove, otherwise our diagnosis is wrong, and that is why I see little or no use for the dental burr, fearing that it will penetrate that smooth, bony barrier.

President's Address

Canadian Oral Prophylactic Association

W. C. TROTTER, B.A., D.D.S.

Jan. 17th, 1928.

It is now 25 years since the C. O. P. A. was conceived and organized by the foresight of our much esteemed past president, Dr. A. J. McDonagh. Our history has been one of almost uninterrupted growth. For several years we were pioneers in Dental Health Educational Work and as the Canadian Dental Association only met every two years and their Oral Hygiene Committee did not function most of the time, it devolved upon us to organize this work in the other Provinces and make some attempt to co-ordinate the work throughout Canada. There is little doubt that the thousands of dollars earned by the C. O. P. A. in royalties from Hutax Products and spent on educational work has been a decided factor in the widespread interest manifested everywhere in this work to-day.

Four years ago the Canadian Dental Hygiene Council was organized and chartered. It is an association of laymen, physicians and dentists representative of the whole Dominion and working together for the promotion of mouth health and prevention of disease. The C. D. H. C. assists the various Provincial Oral Hygiene Committees to organize their Provinces for oral hygiene work in whatever way seems most desirable and acceptable to them. It is eventually hoped to organize these Provinces in a similar way to Ontario with the work under the direction of a Government Official in the Department of Health.

The C. O. P. A. agreed to assist the C. D. H. C. in every way possible in order to make it a success and at once

turned over the educational work to them which they had previously been doing. It loaned them the services of Harry S. Thomson, its Dental Executive, to use as they saw fit. The Council has been using more and more of his time until at present they are using practically all of his time. At first the progress of the Council was hampered for lack of funds, but owing to money grants from the Canadian Government and from the Canadian Red Cross Association during the past year, it has been able to get down to more serious work, and is at the present time directing and organizing an extensive oral hygiene campaign in the Province of Saskatchewan where our Dental Executive, Dr. Harry S. Thomson will be devoting the whole of his time during the next six weeks. This campaign is being carried on by the dentists of Saskatchewan and being organized and paid for by the C. D. H. C. Everything points to it being a great success and if so similar educational campaigns will be arranged for other Provinces as the Council secures sufficient funds to finance them. The Life Insurance Companies appreciate the value of the work we are doing and in fact are bearing the cost of the literature, charts, etc., which will be used in Saskatchewan.

From now on our financial statements should show some improvement as our new brush firmly establishes its reputation and its sales increase. We firmly believe that our new Canadian made brush is the best that can be bought and we feel that with the support of the dentists behind it, the sales are bound to steadily increase. The Hutax paste has also had to face very

strenuous competition this year from all quarters and has had to contend to hold its own.

The sales of both brush and paste could be very quickly doubled and trebled if every dentist would only realize that he can recommend nothing better than Hutax for his patient, and in doing so he is helping to provide the wherewithal for the C. D. H. C. to carry on oral hygiene educational work all over Canada, because all the royalties received by the C. O. P. A. from the sale of Hutax is turned over to the C. D. H. C. in the person of Dr. H. S. Thomson, whose entire services are at the disposal of the Council without cost to them. The dentists of Canada really have an opportunity to greatly increase the financial position of the C. D. H. C. by simply standing back of Hutax preparations to a man.

Owing to the fact that the C. O. P. A. no longer carries on educational work, the work of the directors has been comparatively light during the past year and the relations between your directors, Dr. Harry S. Thomson and myself have been so harmonious that my duties, such as they were, have been a pleasure.

The C. O. P. A. has suffered a great loss in the death yesterday of our much esteemed director and co-worker, Dr. Arthur Day, who has always been a most ardent supporter of this organization. He was an indefatigable worker for every cause in which he took an interest and he took an interest in every undertaking which he thought would benefit his fellow creatures. This is what made him such an ardent Kiwanian. He was always active in any Oral Hygiene work that was undertaken and was ever ready to give freely of his time and ability in its behalf. We will all sadly miss his kindly help and advice and will ever feel grateful to him for the assistance he so freely gave in making this Association a success.

REPORT OF THE ANNUAL MEETING

The Annual Meeting of the Canadian Oral Prophylactic Association was held on January the 17th in the Club Room of the Physicians' and Surgeons' Bldg., 86 Bloor St. West.

The reports of the President, the Dental Executive, and the Secretary-Treasurer were presented and after a thorough discussion by the members present were adopted by the meeting.

The Secretary was instructed to prepare a letter of condolence and appreciation of the late Dr. Day to be sent to his family. Dr. Day, until his death, was an enthusiastic member and director and had always been a strong supporter of the policy of the C. O. P. A.

The Board of Directors for the year 1928 were elected as follows: Dr. Trotter, Dr. McMulkin, Dr. Broughton, Dr. Gausby, Dr. Grieve.

The following is a copy of the reports as presented:

Report of Dental Executive, Canadian Oral Prophylactic Association Annual Meeting, January 17th, 1928

Mr. President & Gentlemen:

I beg leave to present to you a report of the activities of the Canadian Oral Prophylactic Association for the year 1927. In looking back over the work accomplished during the last twelve months, since our last annual meeting, it is very gratifying to find that the ideals toward which this organization has striven, conceived in the minds of those men who founded it, have been perpetuated. The main cause of our existence, the promotion of Oral Hygiene work, has been splendidly exemplified this year in our co-operation with the work of the Canadian Dental Hygiene Council. With the royalties received from Hutax Tooth Brushes and Hutax Tooth Paste, it has been possible for the Association during the past year to pay the salary of and turn over to the Canadian Dental Hygiene Council the full time service of the Field Secretary of

the Canadian Oral Prophylactic Association.

In order that the work of the Canadian Oral Prophylactic Association shall go on, it is more than ever necessary now that we have the hearty support of every dentist in Canada in this great work. The aim of the C. O. P. A. has been during the past 25 years of its history to provide mouth preparations, dentifrices and tooth brushes that are dependable, scientific and efficient, and through these products, by means of money received in royalties, to provide the funds for financial assistance to promote or carry on Oral Hygiene work throughout the Dominion. That these products have been reliable has been amply proven by the quantities of each that has been sold without any advertising or sampling or any of the various means of sales promotion usually employed by the manufacturers of such products.

During the year 1927, the sales of Hutax Tooth Paste have fallen off slightly over those of the previous year. This, I think, has been due largely to increased competition and high pressure merchandising. The keenness of competition has forced many manufacturers to spend enormous sums in advertising, window display and sample distribution, and it requires that every dentist in Canada must have unbounded enthusiasm in Hutax Products to overcome this lavish advertising expenditure. Hutax Tooth Paste is provided to you by competent men, expert chemists and scientific workers for your safety, the safety of your patients, and the betterment of the general mouth health of your community. It is positively reliable—not a single harmful ingredient enters into its makeup. The prescription is written in English on every package. It is efficient, for scientists have very recently declared that a simple tooth cleansing paste with a mild abrasive is the ideal one. Scientists also declare that tooth pastes must not be medicated. Hutax

is not. They also say that it must not promote chemical action in the mouth. Hutax does not; but it is a mild, effective cleansing dentifrice, of the highest standard that it is possible to obtain scientifically at the present time, of pleasing flavor and fragrance. On the strength of these statements, I would ask you to pin your faith to Hutax Paste. Prescribe it wherever such a dentifrice is required, and in prescribing it, know that you are not only doing your best for your patient's welfare, safeguarding your own best interests in the patient's healthy mouth, but you are helping to promote the work of the Canadian Oral Prophylactic Association which stands out unique and alone as a purely philanthropic and humanitarian effort, in providing reliable products, the royalty from which is devoted entirely to the promotion of better health for your community.

You will remember that at the last annual meeting, very high hopes were expressed as to the future of the new tooth brush. Most of these hopes have materialized. It is superior in every way to any brush we have heretofore sold. It is good looking; splendid design; comfortable to the hand; reaches inaccessible parts; constructed of the highest grade materials throughout; manufactured by capable Canadian workers in a splendidly equipped Canadian factory; and it is delivered to the customer sterilized in an attractive package. We are proud of this Canadian brush and from the letters of commendation we have received, we feel that the dentists of Canada are also proud of it.

While the sales of the brush have been steadily increasing the last year, there is still room for great expansion, and we would ask you to very earnestly get behind it, and for your own, your patient's, your community's good recommend the new brushes.

During the year, exhibits of Hutax products have been carried on, at the meeting of the Ontario Dental Association in Toronto in May, the meeting

of the N. B. Dental Society in St. John, the meeting of the N. S. Dental Association in Sydney, N.S., and at Charlottetown in Prince Edward Island. A splendid opportunity was given at all these conventions to bring to the attention of all those attending the merits of Hutax products and the value of the work the C. O. P. A. was doing. The Association has been able to provide a special for school children's tooth brush and a special for school children's tooth paste to school boards and school nurses at a special rate—15c for the tooth brush and 10c for the tooth paste. This method of promoting Oral Hygiene enables the teacher to carry Oral Hygiene further by providing the wherewithal for the mechanical cleansing of the teeth to those who otherwise would not be able to avail themselves of it.

The educational work heretofore carried on by the Canadian Oral Prophylactic Association has been carried on during the past few years by the Canadian Dental Hygiene Coun-

cil, and much good has been accomplished. But if this work is to go on and grow, it is necessary that our revenue increase and that can only be done through increased interest and co-operation from every dentist in promoting Hutax products.

Hutax Brushes and Hutax Tooth Pastes are made in Canada by clean Canadian workmen, under sanitary conditions in ideal surroundings. Every cent of money on them is retained in Canada, and not one cent of profit derived from royalties is distributed to shareholders or directors, but is used to promote better Dentistry and Oral Hygiene Educational work to you and your community.

Will you not very earnestly get behind Hutax products, prescribe and recommend them at every opportunity, and thereby do your share in promoting this work which for 23 years has been carried on by its promoters with only one ideal in view, and that is, providing the means of carrying on Oral Hygiene work, first to the dentist and by him to the community?

Report of Introduction to a Lecture on Dental Histopathology

FREDERICK B. NOYES, B.A., D.D.S., ACADEMY OF DENTISTRY, TORONTO.

In introducing his subject, Dr. Noyes said he wished to take this opportunity of acknowledging an obligation he owed to Prof. J. J. McKenzie, Professor of Histology in the University of Toronto, because it was through his help and kindness that he was afterward able to make photomicrographs. He said he came to Toronto to assist Dr. Black in making some demonstrations of the physical properties of silver amalgam. He acknowledged that it was many many years ago. After his conference with Professor McKenzie he told his faculty that dental histology could not be taught without an appliance to make microphotographs, but the faculty said it would cost too much so he afterward rigged up a camera for a few dollars which served the purpose for about fifteen years and with which he made most of the slides for his text book.

In the first place, he wished to make clear that there is no exact boundary line between physiology and pathology. In some cases definite changes take place which completely return to normal, while in others the same changes will not return to normal, and, further, some very marked changes will return to normal. There is a very wide range of normal in both peridental membranes and alveolar process.

From 1885 up to 1905 the profession were taught by German histologists that there were no lymphatics in the pulps of teeth. About 1909 Switzer injected the lymphatics and demonstrated their existence in the pulp. A few years afterwards Dr.

Dewry and Dr. Noyes attempted to repeat the work of Dr. Switzer by injecting the blood stream directly, and afterward the lymphatics. This was a failure. It was not until many experiments had been made that it was discovered that if the lymphatics were injected first and blood vessels afterward that success came.

After paying his respects to Dr. Gottlieb and his excellent work, Dr. Noyes defined in English the meaning of attachment and adherent as used in connection with the relation of epithelium to enamel and cementum. Attachment, in his opinion, was an intimate interlacing of tissue fibres as between cementum and alveolar process. Dr. Noyes was not able to find such an attachment of epithelium to enamel or cementum when it had once been detached. In his opinion it was an adhesion or a cemental contact rather than an attachment. He pointed out that translations from Dr. Gottlieb's views on this question might give us a wrong notion of Dr. Gottlieb's views.

Dr. Gottlieb's theory that teeth continue to erupt through life was not his view. He thought not the teeth alone came down and forward in the upper and up and forward in the lower, but the process bone and soft tissues erupted and, further, that when the crest of vitality had passed the teeth and peridontium recede as age went on.

He illustrated from slides the cycles of infection and recovery as seen in the gingival tissues. Pointing that Nature aids to recovery if given half a chance.

An Epilus of Unusual Size and Location

R. H. HENDERSON, D.D.S., TORONTO

Patient: Female, age 39, negative family history, good robust health.

The epilus became noticeable about four years ago, shortly after the patient began to wear a partial denture with the four upper anterior teeth. The growth began between the sockets of the central incisors and during the four years gradually grew and spread between the denture and the hard palate, much as weeds grow and spread under a board. It was held in place by the denture. When the denture was removed it would drop down and sometimes out of the mouth. It looked like an additional tongue being about the same size and color. It reached the full width of the arch and extended far enough posteriorly to reach beyond the uvula causing the patient to gag for which discomfort

she sought relief. There was neither pain nor bleeding.

It was allowed to persist through fear it might be cancer and the cost of its removal which her family physician said would be \$250.00.

The treatment in this case was very inexpensive and painless. A horse hair was tied around the pedicle each day a little tighter until the circulation was cut off and in about ten days the patient was coughing when the denture, epilus and all flew out upon the floor. There was little, if any, hemorrhage, no pain. It was about three inches long and two and a half inches wide. The specimen was placed in a jar of alcohol which accidentally evaporated and the specimen shrank to less than one-third of its original size.

Mead's Opinion of When to Extract Pulpless Teeth

1. All teeth showing periapical bone involvement.

2. All pulpless teeth in patients whose health is seriously endangered.

3. All pulpless teeth showing marked periodental bone absorption (peri-dontoclasia).

4. All pulpless teeth bordering on the maxillary sinus.

5. All third molars when pulpless.

6. All pulpless teeth when the root formation precludes the possibility of a good root filling.

7. All pulpless deciduous teeth.

DENTAL SOCIETIES

Principles of Dental Ethics The Toronto Dental Society

Editor.—Since the delegates of the Canadian Dental Association have seen fit to ask its members to subscribe to that obsolete document known as the Code of Ethics of the Canadian Dental Association which is a modification of the American Medical Association code but not adapted from the hypocratic oath we deem it wise to publish the code of ethics of the Toronto Dental Society, written by the late George M. Hermiston, B.A., D.D.S. We do not now know the names of the members of the committee who presented the code to the society but we do know Dr. Hermiston wrote it. We ask our readers and especially the members of the C.D.A. and their delegates to read the code written by Dr. Hermiston and the comments of the editor at that time and compare them with the document they ask their members to agree to. It is a credit of dentistry to have had a member who could evolve such a code in the presence of so much selfishness, bigotry and quackery all about him.

Article I.—The Dentist's Duty to the Public.

Sec. 1.—The dentist should be thoroughly upright and honorable in every relation of his practice. This shall embrace the professional relationship with the public and with his confreres.

Sec. 2.—The dentist should make it his professional duty to honestly and conscientiously advise all his patients as to what service shall best contribute to their comfort and welfare.

Sec. 3.—Inasmuch as the patients are not usually in a position to judi-

ciously or intelligently suggest what shall be done, the dentist should in all honesty advise the course of treatment to be pursued and kindly but firmly insist on doing only such operations as he in his wider education and expert knowledge and training feels will best contribute to the patient's good. These observations are the more sacred because generally the only tribunal to adjudge penalties for unkindness, carelessness or neglect is one's own conscience.

Sec. 4.—Patients in presenting themselves for professional advice and treatment pay the operator the highest possible compliment as to his skill and their implicit confidence in his integrity, and it should be the duty of the dentist to ever keep himself in such a healthy and cleanly condition, both mentally and physically, as shall enable him to offer to his patients his very best services, and thus merit their confidence and trust.

Article II.—The Dentists' Obligation to Each Other and to the Profession at Large.

Sec. 1.—Every profession should be possessed of a peculiar dignity. Everyone on entering the profession, and thereby becoming entitled to full professional fellowship, incurs an obligation to uphold its dignity and honor, and to exalt its standing, and to extend the bounds of its usefulness. It should, therefore, be the duty of every dentist to give his profession every possible dignity, by making his life the embodiment of uprightness and integrity.

Sec. 2.—He should ever be ready to extend to his professional brother

every encouragement and helpfulness. His conduct toward his confreres should be such as he would wish to have reciprocated. He must, so long as he is justified in so doing, uphold before the public, the name, reputation and professional skill of his brother in practice, and under no circumstances should he seek to take advantage of, or cast suspicion upon, his confrere's skill or integrity by word or deed.

Sec. 3.—The dental profession, after many years of uncertain standing among the learned professions, has, through painstaking efforts and careful conduct of its members, given itself a praiseworthy place in professional life. It shall, therefore, be the duty of the dentist so to govern his conduct, and to so present his profession to the public, that he shall enhance the position it has attained among other professions. To this end he should at all times keep in mind what makes a profession, in what way it differs from commercial life, and guard carefully the prestige the dental profession has attained, by committing no offences against its good name, such as making use of untruthful or purely commercial-like advertisements, which may in any way reflect upon our professional standing.

I..... herewith subscribe to the above principles, with the avowed intention of sustaining them both in letter and spirit, and shall, should I be deemed by the Executive of the Toronto Dental Society guilty of violating these principles, be content to have all my privileges in, or claims upon, the Toronto Dental Society, forfeited, until reinstated by unanimous vote of those present at a regular meeting of the Executive.

Now since The Toronto Daily Star and the Rev. R. E. Knowles do not believe there is a hell I don't think members of the Toronto Dental Society or any other such body should place those who sign a pledge in the hell of expulsion for having signed a

pledge so as to give the right of casting offenders into hell fire. In other words the fear of punishment makes no man go right and only torments, without correction, so cut out the pledge; it is no part of the code.

Remarks on the National Code of Ethics and the Question of Fees.

The committee of the Toronto Dental Society which drew up its code of ethics had before it the code of ethics of the American Medical Association, the National Dental Association, and the Canadian Dental Association, besides many others. Most of these seemed to have either too much or not enough. It was believed that dentists had a fair knowledge of the moral law and some conscientiousness of modesty, hence commands and prohibitions were left out and only principles put in.

It was agreed that advertising by a dentist was not illegal, nor immoral, provided the advertisements told the truth. This was held to be a matter of decency. Since the service a dentist renders is a personal attainment, partly inherited and partly acquired by personal effort, it is not good taste, nor a sign of good breeding, to flaunt before the public one's own personal attainments. There would seem to be less vulgarity in advertising the skill of another, and even this is somewhat indelicate. Hence there was no mention of the size of door plate, or the color of the ink to be used in letter-heads.

The National Dental Association code says: "When general rules have been adopted by members of the profession practicing in the same locality in relation to fees, it is dishonorable to depart from those rules. . ." It would be dishonorable, perhaps, to depart from a contract, but what honorable man would make such a contract, having taken the oath quoted, which is now 2,000 years old? In every State in the Union and in every part of Canada it has been held that such contracts are illegal and not in

the best interests of the people. Then the author, in commenting on this, goes one further and says: "No maximum fee bill should ever be adopted . . . but a minimum scale of fees higher than the average now received should be adopted." It is not a violation of the code of ethics, no matter how much is collected, but it is if too little is collected. There is something far more in this subject than large fees being all right and small ones all wrong. Let me give an example. A few years ago it was held by some Hamilton, Ontario, dentists that they could not get any larger fees for their services than they were getting. Their patients wouldn't pay any more. One dentist undertook to show the fallacy of their arguments, by trying to get a large fee from a farmer, a class of people used as examples of closeness in dental fees. This farmer had brought to the city a load of wheat, about thirty-five bushels, for which he received about thirty dollars, and wished to have his "teeth cleaned." He consulted the dentist in question, who at once began to set forth his skill and attainments to the patient and the great service he could render to him by cleaning his teeth. Every dentist knows what might be truthfully said to make an impression. It was agreed that the teeth should be cleaned for eight dollars and that it should be done several times a year. The operation was done, using brush wheels and pumice.

The dentist proved he could collect eight dollars for what most of the dentists had been charging fifty cents

and not spend any more time at it than they had. Was this transaction honest? Did this man receive eight dollars' worth of service to him at his measure of the value of that eight dollars? Think of the days of labor and the investment the farmer had made to produce the eight dollars!

This very kind of ethics has induced a number of dentists in Ontario to sign an agreement, and to charge certain fees for certain operations. All of which is commercialism debauched and contrary to both the civil and moral law. It is worse than a corner on wheat for the avowed purpose of starving the poor to death because they were known not to have enough money to protect themselves.

The value of a service must be judged by the man who pays for the service, not by the dentist who computes it by the cost of the service to himself. The only way a dentist can control the cost of a service to the public is by not needing to give the service to make a living, or by artificially controlling the number of dentists who need to make a living out of the sale of their services. We have done the latter wherever there is a dental law prohibiting anyone from practicing. When dentists begin to advocate fees out of proportion to their value to those who need them, when compared with all other necessities of life, then the Legislature should step in. This does not mean that dentists' fees are now too high, but it does mean that there is an ethical side of the question which is too frequently forgotten.

Montreal Dental Assistants' Association

The monthly meeting and Clinic Class of the Montreal Dental Assistants' Association was held on Monday, February 20th, 1928, at 8.30 p.m., at the McGill University, Dental Faculty. Miss Firth, President, opened the meeting by introducing the speaker, Dr. Wesley Bourne, anaesthetist, who chose for his subject — "Concerning General Anesthesia in Dentistry." Dr. Bourne dealt first with the history of Anaesthesia. The speaker turned from ancient applications of drugs to their importance in regard to early surgery. He showed a slide of a man having his leg sawed off while about a dozen others attempted to prevent him from struggling. In slightly later years we find Shakespeare continually mentioning drugs in his plays. Dr. Bourne touched on the bearing of mesmerism on anaesthesia. Mesmerism has never been popular owing to the ease with which its use may be changed to abuse.

Dr. Bourne next indicated the origin of the name "Anaesthesia", which now is ordinarily applied to drugs used in medical work. The man who chose this word was the celebrated

American poet, Doctor Oliver Wendell Holmes. He arrived at this result by an extensive combination of Greek phraseology.

The lecturer then displayed a number of slides illustrating dental appliances especially as they concern the administering of gases for operations. He then delivered a short talk on the danger of acidosis being produced in the blood after being under an anaesthetic. Blood, is ordinarily alkaline. A little ether mixed with nitrous oxide is sufficient to prevent this acidosis. Alkalis should be given before operations. The liver is often affected in the same way. Dr. Bourne concluded his address by explaining the functions of two appliances for administering either nitrous oxide, acetylene, or ether, which he had with him. These machines constituted the latest model in Dental Anaesthesia and were judged extremely efficient. The practical demonstration lasted four minutes.

A hearty vote of thanks was passed to the speaker. The meeting then adjourned.

Canadian Dental Research Foundation

Meeting was held on December 16th, 1927, Dr. McLean presiding. There were present: Drs. S. M. Richardson, Husband, Seccombe, Webster, Mason, Conboy and Grant.

Minutes of last meeting were read and approved.

Secretary read the Financial Statement as follows:

Trust Account—

No change since last meet-

ing. Amount paid up ..\$13,838.00

Current Account—

Balance at last meeting....\$ 873.32

Received from National

Trust Company, interest 607.77

Received from sale of Bulle-

tins 140.35

\$1,621.44

Disbursements—

Grant to Dental Faculty,

University of Toronto..\$	300.00
Sundries and Bank Dis-	
counts	11.39
Stationery and Postage....	34.14

Balance on Hand.....\$1,275.91

Accounts Payable—

National Trust Company....	\$13.41
Postage	10.00
Stenographic assistance	30.00

It was decided to have the books audited as soon as possible after the end of the year.

Dr. McLean reported that the Board of the Royal College of Dental Surgeons had, at their annual meeting, made a grant to the Foundation of one thousand dollars. The secretary was instructed to write the secretary of the Board, to ask if this grant might be forwarded.

Secretary read correspondence received from the secretary of Dental Faculty and the bursar of the University, acknowledging receipt of grant of three hundred dollars.

It was decided to make a contribution of one hundred dollars to the Canadian Dental Hygiene Council towards the rental of office jointly occupied with them for the year of 1927.

Dr. Seccombe reported that the University of Toronto publishes itself, any research work by its staff, and that funds had been provided this year for Dental Research, and they

propose to publish from time to time bulletins, giving results of this Dental Research. The first of these will be one by Dr. Box on "The Treatment of the Periodontal Pocket." Dr. Seccombe said this will be a very practical Bulletin, and he thought arrangements could be made with the University for the Foundation to purchase copies of these for distribution to the Dental profession.

Dr. Conboy moved, seconded by Dr. S. M. Richardson, that the Foundation purchase a sufficient quantity to supply all the dentists of Canada who request it, and that a return postcard be sent to all the dentists of Canada, to ascertain how many will be required. This was carried.

Dr. Conboy suggested that dentists who have any problems for research, be invited to send them to the Foundation which might act as a clearing house, and arrange to have these problems submitted to various research organizations, with a view to having these problems worked out in the best possible way without overlapping of effort. It was decided to send an announcement to the effect to the dentists, either on back of new Bulletins, or on postcards announcing new Bulletins.

The meeting adjourned.

EDMUND A. GRANT,

Secretary.

Dentists Licensed to Practice in British Columbia

Successful candidates in the recent examination of the College of Dental Surgeons in British Columbia, to whom certificates have been granted to practice in the province, are: Frank H. Penwill, Portland; L. A.

Day, University of Toronto; G. T. Lawrence, San Francisco; W. K. Murchie, Portland; W. D. MacLeod, McGill University; L. J. McDougall, University of Toronto; S. R. Richardson and R. H. Colbourne, Portland.

As Others See Us

PERCY A. ASH, D.D.S., SYDNEY.

UNIVERSITY OF TORONTO, CANADA.

The Editor feels that he cannot do better this month than devote the Leading Article to a short account of his trip abroad, from which he returned on the 26th November, by the R.M.S. "Makura," from San Francisco.

It will be remembered by the readers of the Journal that he left Sydney on the 25th August by the R. M. M. S. "Aorangi" for Vancouver, en route to Toronto, as the Delegate of the University of Sydney to the Centenary Celebrations of the University of Toronto. The travelling by sea and rail need not be described, because nowadays so many people travel and the conditions are so well known that there is nothing fresh to tell.

A description of the proceedings at the University of Toronto should, however, prove interesting. It may be said at once that the scale on which they were carried out was one which it would be difficult to surpass. The official programme lasted for four days, and comprised a great variety of entertainment, including the Opening Ceremony and reception of delegates, the Centenary Dinner, the dedication of the Carillon, several informal luncheons, Centenary Ball, unveiling and presentation of memorials, a great Rugby football game, etc.

The formal opening and reception of delegates was probably the outstanding feature of the celebrations. The Chancellor, the Lieutenant Governor, the Prime Minister of Ontario, the President, the Governors of the University, heads of colleges and deans of faculties, professors and staff, the delegates and the specially invited guests of the University as-

sembled at 1.45 p.m., and marched in their academic robes for a distance of a few hundred yards to a huge building known as the Arena, and capable of seating over 5,000 people. The procession numbered probably between 500 and 600 persons, and the beautiful robes of all those who took part helped to make the sight one to be remembered.

At the Arena, the delegates from universities, colleges and learned and scientific societies (who, alone, numbered about 250), were awarded seats of honour, and arranged in groups, previously determined. For instance, the first group comprised Europe, Asia and South and Central America; the second, the United States of America; the third, Great Britain, and Dominions, other than Canada; the fourth, Canada. An address was read by the President of the University, which was followed by congratulations by the Prime Minister of the Province of Ontario, and the delegates, who in many instances were the highest officials of their respective universities or colleges, were then presented to the Chancellor.

It would be most interesting, if space would permit, to publish the list of delegates who actually attended, with their qualifications and the countries which they represented. All were treated with the utmost kindness, and the hospitality offered by the University was unbounded.

Apart from the efforts made by the University officials in that direction, the delegates themselves made every reasonable effort to know one another. Had not such a course been adopted, a great deal of pleasure derived from the gathering would certainly have been lost. For instance, on the first day, four of the dele-

gates, including the Editor, entered a luncheon hall and were escorted to a table for four, where they all sat down as if they were old friends, whereas they were entire strangers. In accordance with the best British traditions, no one ventured a word until, at last, the silence becoming very wearisome, one of the four found his voice and started a conversation by announcing his name and stating that he had come from England. The others very quickly followed suit, and it was found that the four men represented England, Scotland, Africa and Sydney, and as can be imagined, a friendly and most interesting discussion followed.

Two other outstanding items on the programme were undoubtedly the Centenary Dinner and the Centenary Ball, the latter being held in a beautiful building known as Hart House. It would be difficult to give an adequate idea of the magnificence of the ball without setting out a full description of Hart House, and that would be impossible in such a short article as this. Some idea of the extent of the ball, however, might be gathered from the fact that there were five ballrooms, and a fine orchestra in each one, and each hall full of dancers. Two partners might commence in Ballroom No. 1 and then pass on through all the rest, in each one finding beautiful decorations and a first-class band playing a different tune.

A very interesting part of the proceedings was the ceremony in connection with the conferring of honorary degrees. In all, only twenty-six were awarded. The President explained in connection therewith that it had been decided to make the occasion an opportunity for conferring de-

grees upon several of their own graduates who had gained distinction in their particular vocation in life. In addition, a certain number were to be given to distinguished people of learning in the United States. Twenty-two out of the twenty-six were distributed in that way. Of the remaining four, it was understood that one was given to England, one to Scotland, one to Ireland, and one to the rest of the world—the last being awarded to a Frenchman.

The Editor, who was accompanied by his wife, wishes to record that the hospitality extended to both of them was practically unlimited. They received cards of invitation for every function during the whole of the four days, and they attended as many as the average human constitution could stand.

Many lectures upon different subjects were given during the proceedings, and the visitors were invited to contribute to these. The Editor had the honour of being asked to speak once or twice, and especially to deliver a one-hour address before the Faculty and students of the Department of Dentistry. In introducing him, on the occasion, the Dean of the Faculty, said some very pleasing things, and especially referred to the high compliment the University of Sydney had paid the profession of dentistry in selecting a member of that profession to represent it on such an important occasion.

The Editor wishes to express his appreciation of the kindness and attention extended to him by the Dean and other members of the Faculty of Dentistry. He will remember his trip to the University of Toronto as one of the bright spots in his life.

The Alberta Dental Association

The Alberta Dental Board and Association met in Calgary, Jan. 23rd to consider business accumulated since May last. Owing to errors having crept into the Books of the Board and Association over a number of years, the President, Dr. H. L. Coursier, explained the necessity of having them brought up to date and placed on first class footing. Dr. Coursier had present at the meeting, A. Blair Paterson, solicitor for Dental affairs in the Province and his advice during the meeting made splendid progress with the books placed in order. The members present were so impressed with the innovation of having legal advice as a guide, that it was placed on record

as being favored for all future annual meetings. Dr. Coursier is to be commended for adjusting affairs at this time so that the Association can look forward to future court proceedings with confidence.

Dr. Leslie McIntyre and Dr. A. B. Mason, a committee on bye-laws, brought in a report, recommending changes necessary to bring them up-to-date.

Dr. L. T. Allen was appointed D. D. C. representative. Dr. A. B. Mason was re-appointed as representative on the Senate of Alberta University.

Dr. John W. Clay was appointed as delegate to the Canadian Dental Association.

Class of 2T3

The Secretary of the Class of 1923 is anxious to hear from those who are making plans to attend the Reunion. It is now five years since we graduated and at that time we agreed to have a big reunion at the Ontario Dental Convention in 1928. Although we have sent out several letters to members of the Committee on Reunion, all have not replied. The success of this Reunion will depend on your individual effort. From such an "Unusual" Class, it is not too much to ex-

pect an attendance of 200. We hope there is enough of the "Old 2T3 Spirit" to arouse your interest in this Reunion, and that you will make a very special effort to be with the boys that you haven't seen for five years. Make definite plans now, and don't pass up the opportunity of renewing old friendships at the Whizzbang Reunion. If you have any bright suggestions in regard to the program, send them in to the Secretary of the Class—Robert E. Brayley, 86 Bloor St. West, Toronto.

Spot Grinding

BY WALTER A. LOOPE, D. D. S.

Unknown to Dentistry a few years ago, spot grinding has found a place in modern practice, that would be hard to fill by any other procedure.

By its use, natural teeth as well as artificial dentures are adjusted, trued and balanced to a state of perfection, that was undreamed of, until recently.

High cusps are detected and reduced; interfering planes are found and so altered, as to become a functioning part of the masticating machinery.

Stresses and strains, that would cause sore spots, tipping of the denture, fracturing of the teeth or bases, and limiting their functions, are now discovered and corrected; and by judicious "spot grinding" these destructive forces are changed and made to serve us.

In natural teeth these same changes are made, so that the very influences that would cause impaired circulation, loose sore teeth and destruction of peridental membrane, are now made to serve our patient's welfare, and add years to the life of the natural teeth.

Have you ever stopped to think of the many ways you might apply a

little "spot grinding" to yourself and to your practice?

If you attend but one meeting a year, read but one magazine, and study only your favorite line of work, is it not likely that you are leaving a few "high cusps" or "incorrect planes" in your work that may throw your practice out of "balance"?

Remember that "Gross Interference" is easily found and corrected, but the smaller interferences, lighter stresses and low grades of destroying influences are difficult to detect, and need constant study and thought.

Don't you think that by attending more meetings, reading on more Dental subjects, and taking more Post-Graduate work, you will be better able to maintain an equilibrium in your Practice, that is conducive to BIGGER SUCCESS and BETTER SERVICE?

IN 1928 PLAN FOR 1929!

Do not fail to look forward to, and plan to ATTEND the meeting of the NORTHERN OHIO DENTAL ASSOCIATION, June 4, 5, 6, 7, 1928, Hotel Winton in Cleveland.

W. A. Loope, Publicity,
6516 Detroit Ave.

The Orthodontic Club of Toronto

A meeting was held in the Club Room of the Physicians and Surgeons Building on December 6th, 1927, at which all those specializing in Orthodontia in Toronto were present. It was decided to form a Study Club and a committee was appointed to bring in a tentative constitution and suggestions for study and research.

A second meeting was held on January 17th. The above name and a constitution were adopted, twelve charter members were named, and the following officers were elected:—Pres., Dr. H. G. Bean; Vice-Pres., Dr. C. A. Kennedy; Sec. Treas., Dr. S. S. Crouch.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

ASSOCIATE EDITORS:

QUEBEC—Eudore Debeau, L.D.S., D.D.S., Montreal; A. W. Thornton, D.D.S., L.D.S., Montreal.

ALBERTA—Leslie McIntyre, D.D.S., L.D.S., Edmonton.

NEW BRUNSWICK—Jas. M. Magee, L.D.S., D.D.S., St. John.

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ONTARIO—S. Stewart Crouch, D.D.S., Toronto; W. C. McCartney, D.D.S., L.D.S., Ottawa.

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TORONTO, MARCH, 1928

No. 3

Oral Prophylaxis

One would be led to believe from recent writings on the subject of oral prophylaxis that it all originated at Bridgeport, Con. There may be some good reason for overlooking the work of D. D. Smith, of Philadelphia, because in the first place he was anything but an agreeable person to get on with and in the second place his writings did not appear in any of the regular dental publications. A third reason may be that he was so verbose that few wished to listen to him until he was through or would publish his long drawn out discourses. The fact is he quarreled with everyone who ought to have been his friends and at the same time made one of the greatest of contributions to his profession.

D. D. Smith made the first public announcement of the value of oral prophylaxis in 1898. Almost fifteen years before the Bridgeport experiment, Smith was the first to show the value of polishing the surfaces of teeth for the prevention of dental caries, gingivitis and periodontoclasia. He not only demonstrated how to do it but also designed the instruments, equipment and therapeutic agents for carrying it out. He systematized the operation, observed its consequences, recorded the facts demonstrated to his confreres and showed his patients for observation. It was he who began the practice of frequent, regular mouth examinations and treatments. It has since extended to other departments of dental practice. At one time he in-

vited a number of dentists from all parts of the United States to spend a few days with him observing his patients and his methods of practice. The *International Dental Journal*, not published now, is the only magazine in which can be found his early writings.

The Bridgeport experiment had in view the attainment of the same idea as Dr. Smith, but by the use of trained young women and the revolving of machine polishers, both of which Smith condemned violently.

Dr. Smith's practice of polishing the surfaces of the teeth with a fine grit on an orange wood stick held in the hand seemed so simple that dentists could hardly be brought to believe that it would prevent decay and periclasia, hence it had to be demonstrated.

It is a marvel to the writer why dentists and dental colleges go on teaching and talking about oral hygiene, filling teeth, diet and drugs when a method of practice, which has been proven scores of times to be efficacious, such as oral prophylaxis, is neglected. It may be thought to be too much like cleaning teeth and it is like it the way some dentists do it. True, it is tedious, hard work, but it has its rewards.

The Eskimo and Their Dentistry

We are in receipt of a letter from a dentist who visited Northern Canada during the past year and takes exception to our statements concerning dental practice among the Eskimo. The fact is, all we know about the matter was contained in a press clipping from the *Edmonton Journal*, which gave the story of a dentist who went north to practice and when coming away sold his seamless crown outfit, dental engine and other dental appliances for making crowns to an Eskimo who was ever since plying his art. Since no dentist who knew this was not true denied it it left dentistry accused of improper practices. My informant says that a dentist went north several years ago and did practice for Eskimo and did sell an outfit to an Eskimo who wanted it to carve walrus tusks, so he said. However, the outfit is still lying in the Hudson's Bay Stores at Aklavick. The owner of the outfit had to go to the East Arctic, so left it in the store. The lurid write-up was based upon this story, together with the fact that our informant says that the Hudson's Bay factor said the dentist in question didn't do all the unscrupulous things he is accused of. We are glad to report that things are not so bad as they appeared.

Another thing arising out of the matter is the necessity of having the Department of Health at Ottawa look after the natives of the north country. The Dominion Dental Council might well call the Department's attention to such matters.

NOTES

Dr. B. Reeves died suddenly at 315 St. Clair Avenue West, Toronto.

Dr. Sutherland, who has recently been with Dr. McKay of Biggar, Sask., has bought out Dr. Lumb, and will hang out his shingle in Drumheller.

Dr. Budd has returned from California, and is now located in Lacombe.

Dr. Goodhand, formerly of Stettler, has opened an office in Calgary.

Dr. Nelson of Hanna, has moved to Calgary, where he is now located.

Two people were allowed to go free for parking infringements in one day because they said they had been held up by a dentist. Rather suspicious statement.

Sixty-three dentists registered for the dental clinics at Edmonton.

Dr. Stoddard, of Winnipeg, has taken up practice at Three Hills, Alta.

A Detroit paper says that a guinea pig had its legs drawn up from rheumatism in a few hours after injecting eight drops of pus taken from the root of a tooth. Such loose statements only make those who make them look ridiculous.

Two women of Detroit each sued Dr. James A. Nelson for \$15,000 damages for injecting a strong antiseptic into their gums instead of cocaine. They each recovered \$3,000.

Dr. W. E. Cartwright, Calgary, died suddenly January 19th, 1928.

DENTAL ASSISTANTS

The Toronto Dental Assistants' Association held their monthly meeting recently, the question of incorporation as a society being discussed at length. An address on the "Ethics of Handling Patients" was given by Dr. F. J. Conboy, Director of Dental Service for Ontario. Miss Alta Aitken presided.

Dr. Rupert Hall gave a demonstration and address in Hamilton, Ont., on dental prosthesis, January 10, 1928.

Dental Chart Leads to Identity of Man Charged With Forgery

St. Louis, Mo., Jan. 27.—A dental chart showing the exact position of the fillings in his teeth to-day was one of the clues leading to the arrest of Morris S. Gaskill, of Lockport, N.Y., formerly a prosperous business man, accused of forgeries totalling \$100,000.

Although friends had identified as his a body taken out of the Niagara river after he had threatened "to end it all," and disappeared, a dental chart proved to insurance companies that the dead man was not Gaskill. The companies then followed several clues which led to the prisoner's arrest here last Wednesday.

Editor—Are your charts sufficiently accurate to sustain such a charge?

British Columbia dentists might by becoming members of the Dominion Dental Council in a measure free themselves from the charge of being a closed corporation for private gain as every now and then appears in their public press.

Under the heading "Dentistry Taught in U.S. Army Schools" the New York "Times" sets forth three courses, one in dental mechanics, one in oral hygiene, and one in Radiology. These courses extend over six months for the first one and three months for each of the others. The outline of the course would indicate a very thorough training. In fact one can hardly see why an oral hygienist should be given so much time on histology, physiology and pathology, and not one word said as to the preliminary education required so that the candidate might understand the value of the course.

Based upon several recently studied factors concerning the human teeth and their preservation dentistry will have to readjust the present and past practices of preventing dental caries and diseased peridental membranes. Dentistry will have to give more time to the study of the anatomy, physiology and pathology of deciduous teeth. Cavity preparation must be changed to meet the present demands of young people.

Again we commend the dental publicity carried out in the Winnipeg "Free Press." Such articles describing what modern dental practice is like and what the patient may expect from a well trained dentist are the greatest possible offset to the dental advertiser who leaves the impression he is the only one who can render such services. Why shouldn't organized dentistry give a complete course of instruction on dental education and practice so that the public would understand in a general way what they should get and what they should expect. There is no mystery about dentistry. There are no secrets to be kept from anyone. The more the public know about dentistry the more they will seek its benefits.

The Calgary School Board has employed another dentist, making three. It was reported to the Board that twelve dentists would be required to care for all the children's teeth properly. One member of the board set forth the argument that in failing to attend to all the children's teeth properly they were deceiving the people who thought their children were receiving dental care. Calgary has State dentistry, and the people have a right to demand attention for their children. All pay taxes and all should get equal attention, just as occurs in reading, writing and arithmetic. On what kind of argument might some children be denied arithmetic while others got it. Dental service is quite as essential as arithmetic, and was so judged the very moment the Board undertook to supply it to their pupils.

The annual inspection of the public school children of Dundas, Ontario, revealed the fact that in the five rooms examined by Dr. Hill the top students had a clean bill of mouth health.

The recent publication of a treatment for pyorrhea in the daily press of Toronto has led to some controversy as to the wisdom of such publicity. This like other cures has placed the profession in an awkward position because it rather forces them to use it whether they want to or not.

Dr. R. J. B. Bayne has begun practice in Oshawa, having sold his practice in Chapleau, Ontario.

The travelling clinics introduced by the Provincial Department of Health, consisting of three nurses, two doctors and a dentist, to visit rural districts in Northern Alberta, have been so successful that it is proposed to extend this work to cover the entire province.

Enlightened, intelligent dentistry will yet supply the missing link in the medicinal treatment of tonsillitis, many throat and stomach troubles, gastro-intestinal troubles, diabetes, and perhaps epilepsy and cancer, which in many cases are undoubtedly the direct result of septic states of the human mouth of dental origin.

Dr. Scott, of Vermilion, gave a short clinic on fractures at the mid-winter clinic of the Edmonton Dental Society.

Three visitors from the neighboring province of Saskatchewan visited Edmonton for the meeting on January 30th: Dr. McInnis, of North Battleford; Dr. Sutherland, of Biggar; and Dr. Dunbar, of Unity.

Quite a number of Northern Alberta dentists visited Edmonton for the clinics on January 30. Those noted were Dr. Shea, of Camrose; Dr. Guy Murray, of Sedgwick; Dr. Barnett, of Killam; Dr. F. E. Dodds, Red Deer; Dr. Long, Red Deer; Dr. Ward, of Leduc; Dr. Hoare, of Wetaskiwin; Dr. H. L. Coursier, of Wainwright; Dr. Sheahan, of St. Paul de Metis; Dr. Schlain, of Mundare; Dr. Cook, of Lloydminster.

It is with the greatest regret that we have to report the death of Mrs. G. E. Long, of Edmonton. The heartfelt sympathy of every dentist in the city is extended to Dr. Long and family.

It is the intention of the Hon. Geo. Hoadley, Minister of Health for the Alberta Provincial Government, to introduce a Professional Discipline Act at the present session. By this act it is intended to supplement the present disciplinary powers of the professions by a new Board as a Court of last appeal in case either party feels an injustice has been done.

Doctor A. H. Mabee, Gananoque, Ontario, delivered an address to the Men's Service League of his town on "Dental Health Service."

The Vancouver "Evening Sun" in an Editorial puts forth the idea that all forms of advertising legislation or rules should be submitted to the local advertising agencies for approval before becoming law. This is all right, provided they do not force organizations such as the professions to advertise if they don't want to. If an organized body like dentistry decides not to advertise their professional skill in the public press surely they should be at liberty to attend to such matters themselves. Some of our readers in British Columbia should show the editor of the "Evening Sun" an Editorial in the February issue of the "National Dental Journal," written by Dr. C. N. Johnson. It might help some, if the "Sun" editor hasn't a pecuniary bias.

A person, a Guild, a society, a community, a nation is judged, or classified in the social scale by the refinement of its tastes. People of refined tastes do not often praise their own personal virtues or skill. An honest salesman can with propriety extol the virtues of his goods which were made by another, while it would be indelicate to praise his own design of the goods.

The tenth annual meeting of the American Society of Oral Surgeons and Exodontists will be held at the Radisson Hotel, Minneapolis, Minnesota, August 17 and 18, 1928.

HARRY BEAR, Secretary,
No. 410 Professional Bldg.,
Richmond, Va.

It must not be forgotten that there is a danger of patients swallowing artificial teeth, crowns, and bridges.

Deputation Interviews the Minister of Health

A deputation waited upon the Government on Thursday, January 12, for the purpose of stressing the necessity of providing Provincial grants to assist municipalities in financing public dental clinics.

The deputation was received by the Hon. Dr. J. D. Monteith, Provincial Treasurer; Dr. W. J. Bell, Deputy Minister of Health; Dr. Fred J. Conboy, Director of Dental Services, and Dr. Harold Keith Box, Honorary Consultant in Oral Hygiene, Ontario Department of Health.

Mr. Henry C. Scholfield, M.P.P. for St. George constituency, Toronto, introduced the deputation, and pointed out that it, in a very large measure, represented public opinion in Ontario as the various members were speaking on behalf of the many thousands who were identified with their various organizations.

The chief speaker for the delegation was Dr. Wallace Seccombe, Dean of the Faculty of Dentistry, University of Toronto. Dr. Seccombe outlined the various kinds of services required and named the grant needed in each case. He was ably supported by: Mr. E. E. Reid, of London, President of the London Life Insurance Company and Chairman of the Health Committee of the Canadian Life Insurance Officers' Association; Mrs. J. W. Stone, of Bond Head, President of the Federated Women's Institutes of Ontario; Dr. H. Agnew, Secretary of the Canadian Medical Association; Mr. M. A. Campbell, of Milton, President, rural section, Ontario School Trustees and Ratepayers' Association; Mr. A. E. Bryson, Secretary of the Ontario Educational Association; Dr. W. L. Hutton, Medical Officer of Health for Brantford; Mr. James Simpson, rep-

resenting the Trades and Labor Council; Dr. E. A. Grant, Lions Club; Dr. Health, Hamilton.

These speakers emphasized the importance of dentistry in the field of preventive medicine, showed the absolute need for the various kinds of services and proved that in many cases these clinics could not be established without Government assistance.

Other members of the deputation were: Dr. Routley, Secretary of the Ontario Medical Association; Dr. J. H. McConnell, President of the Toronto Academy of Medicine; R. H. Cameron, President of the Ontario Hospital Association; A. C. Galbraith, Past President of the Ontario Hospital Association; Mr. Phillips, School Health Section of the Ontario Educational Association; Dr. Cecil Trotter, Canadian Dental Hygiene Council; Col. Nasmith, Canadian Dental Hygiene Council; Dr. E. A. Grant, Lions Club; Dr. McGuire (Simcoe), Dr. Davidson (Ottawa), Dr. R. G. McLean, Dr. A. D. A. Mason, Dr. W. E. Willmott, Board of Directors of the Royal College of Dental Surgeons; Rev. Father Minehan, E. B. Daykin, Judge Harkness, Ontario Social Service Council; Miss Florence Emory, President, Registered Nurses' Association of Ontario; Mr. C. McLean, Federation for Community Service; Rabbi Isserman; Dr. Marty, Mrs. Becker, Home and School Clubs of Ontario; Dr. Routley, Ontario Red Cross Association; Mr. Samuel Farmer, President of the Ontario School Trustees and Ratepayers' Association; W. M. Morris, Secretary of the O. S. T.; Mrs. C. W. McMullin, Social Service, Presbyterian Church; Miss Bessie A. Ross, Women Teachers' Association; Mr. John Firstbrooke; F. G. Osler; D. M. Wright of Stratford,

Children's Aid Society; Dr. A. E. Webster (President), Dr. J. A. Bothwell (Toronto), Dr. S. A. Moore (London), Dr. J. C. Devitt (Bowmanville), Dr. T. J. Campbell (Galt), Dr. L. A. Kilburn (Hamilton), Dr. Harold Clark (Toronto), Dr. W. H. Woodrow (Brockville), Board of Governors of the Ontario Dental Association; Dr. R. J. Reade, Dr. J. C. Livett, Dr. F. C. Husband, Dr. Willard Armstrong, Ontario Oral Hygiene Committee; Thos. Holgate, Mayor of Bowmanville; Dr. Gordon Bates, Canadian Social Hygiene Council; J. P. Moore, K.C., M.L.A., London North; Dr. W. B. T. Amy, Dr. Edmund Guest, Dr. Gordon Frawley, Dr. Risdon, Dr. Madill, Toronto Academy of Dentistry; Dr. C. G. Chapin, Toronto Eastern Dental Association; George W. James, Editor, "Statesman," Bowmanville; Dr. J. J. Lavine, Toronto Hebrew Dental Society.

The deputation asked the Government to arrange for Provincial grants so that

(1) Municipalities willing to establish a school dental service will receive an annual grant sufficient to cover the cost of the equipment over a period of ten years.

(2) In municipalities too small for a regular dental clinic arrangements may be made by the municipality to send the children to the office of a resident dentist who will do the work for the cost of material and overhead, thus giving his time gratuitously. In such cases, the Government will be asked to make a grant to the municipality equal to 12½ per cent. of the cost of the service.

(3) Travelling clinics will be organized for the more remote parts of Older Ontario. The municipalities arranging for the clinic will pay the dentist a per diem fee, and the Gov-

ernment will make a grant to the municipality equal to 12½ per cent. of the cost of the service.

(4) Hospital dental departments may be established, the Government giving a grant of 10 cents per operation and the municipality paying at least 15 cents per operation to assist in covering the cost of the service. Dentists will give their time gratuitously.

The desirability of making it easier for workers in industry to secure dental treatment was also presented.

The Hon. Dr. Monteith, replying on behalf of the Government, complimented the deputation upon the clear and comprehensive manner in which the requests were presented. He stated that the members of the Cabinet appreciated the importance of dentistry in public health and were anxious to do all in their power to improve public dental health. He drew attention to the fact that the finances of the Province are limited and, consequently, the Government had to be careful in regard to expenditure. After stating that the Dental Branch of the Ontario Department of Health was already doing much valuable work, Dr. Monteith promised to bring the message presented by the deputation to the attention of the Government, and assured the delegates that it would be received in a most sympathetic manner.

Dr. Arthur W. Ellis, Secretary of the deputation, thanked Dr. Monteith for the cordial reception given the delegation, and stated that he had received a number of telegrams and other messages from prominent citizens who enthusiastically supported the requests presented, but found it impossible to be present.

Director of Dental Services.

Why Oranges are So Largely Used

The inclosed was clipped from D. D. Journal Notes of Dec., 1927.

We wonder how much the orange growers have to do with the great boom in the use of oranges as a health giver. Just why oranges should suddenly have such health-giving virtues makes one suspicious.

If you were acquainted with the works of Dr. Wells at the Lister Institute of London, Eng., and a great many other research men, and the extent to which Baby Doctors are prescribing Orange Juice for babies, you would know that the findings of research men and the teaching of the Physicians who heed their findings are responsible for the boom in the use of oranges.

W. H. Liddle, D.D.S.,

Ottawa.

Yes we are aware of the classical work done by Wells while in the Lister Institute, London, and the work done by other investigators on the same subject, but oranges have been a household fruit for centuries and their virtues have been known for a long time, but not scientifically demonstrated as now. The point is we are led to believe that oranges possess a peculiar substance which is health giving and is not to be found in any other fruit. Will our correspondent direct our attention to where we can find a research work which will show the superiority of oranges over any or all other fruits for all ages and all ailments, as we are led to believe from advertisements. We don't doubt for a minute that oranges will do much of what is said for them, but there are other points which to a less degree perhaps, possess vitamine A. Canada possesses an abundance of fruits which possess these properties. In fact Dr. Wells himself, throws some doubt upon

stored fruits or those shipped long distances, possessing vitamins in their full value.

We are all influenced by what is constantly in our presence, the physician as well as the mother, the housewife or the dietitian. The advertiser knows this and makes a campaign in certain areas at a time, so we cannot fail to see the advertised foods. The advertisers of oranges are interested in selling oranges, not curing people of disease. It is just like the campaign to sell milk. Boards of health were swung into line to help dairymen to sell milk, believing that milk was good for everybody, and especially children. As a matter of fact a large number of physicians and especially pediatricians do not believe milk is good for all children at all ages.

While we are on the subject we may be pardoned the remark that strained refined orange juice kept for days in a bottle or pitcher is not the best form in which to administer to anyone. The juice should be taken from a recently ripened orange containing all the cellulose within the rind.

We thank Dr. Liddle for drawing attention to this subject because it may induce some of our readers to use more fruits including tomatoes.

The Seventieth Annual Session of the American Dental Association will be held in Minneapolis, Minnesota, August 20-24, 1928.

Mr. Douglas Smith, head of Pepsi-Cola Company, died November 3rd, 1927.

It is said by some dentists that wood pulp rolls are better for damping back moisture than cotton rolls.

A Testimonial to Dean Thornton Planned by His Friends

The many friends of Dean Thornton will learn with sincere regret that his health has been gradually failing for

some time and that his condition is such as to demand a complete rest and retirement from active work.



A. W. THORNTON, D.D.S., L.D.S.
Dean of Dental Faculty of McGill University.

Doctor Thornton has given many years of valuable service to his chosen profession and it is proposed that his retirement be marked by a suitable testimonial from his numerous friends as an expression of their affection and the appreciation of the profession for the valuable contributions Dean Thornton has made to the status and progress of Dentistry.

It has been decided by a committee of his personal friends that the testimonial shall take the form of a purse of gold and that every dentist have the privilege of sharing in this token of good-will toward one of their number who has been permanently incapacitated by illness. Those desiring to avail themselves of this opportunity may do so by forwarding name and amount to *Doctor A. L. Walsh, McGill University, Montreal, before the 20th of April.

Dr. Thornton graduated in Dentistry from the University of Toronto in 1890 and practised for a number of

years in Chatham, Ontario. In 1902 he was appointed Professor of Crown and Bridge Prosthesis in the School of Dentistry of the Royal College of Dental Surgeons of Ontario, where he served until 1913, when he was appointed Dean of the Faculty of Dentistry at McGill.

Dean Thornton was greatly appreciated as an after-dinner speaker both in Canada and United States, and some years ago was honored in being elected President of the American Dental Teachers' Association.

The Thornton Testimonial Committee

The Thornton Testimonial Committee is composed of Doctors F. G. Henry (chairman), A. W. McClelland, F. H. A. Baxter, J. S. Dohan, D. P. Mowry, Wallace Seccombe and A. L. Walsh, honorary secretary-treasurer. A special names committee has been appointed with Dr. Dohan as chairman.

*Please make cheques payable to McGill University, Thornton Presentation Fund.

Dr. Switzer to Visit Western Canada

The University of Toronto has completed arrangements for D. W. G. Switzer, Associate in Clinical Dentistry of the Faculty of Dentistry, to visit the local dental societies of the larger centres of Western Canada and present demonstration-clinics on Impression Taking and Full Denture Prosthesis. Dr. Switzer's trip will take about a month and a half, as he will leave Toronto on Saturday, March 31st, and return on Saturday, May 12th. The local societies have cordially co-operated in arranging for meetings during Dr. Switzer's stay in the following centres: Winnipeg: Monday and Tuesday, April 2 and 3; Brandon: Wednesday noon till Friday noon, April 4 and 5; Regina: Friday evening till Monday afternoon, April 6

to 9; Moose Jaw: Monday afternoon till Wednesday noon, April 9 to 11; Swift Current: Wednesday afternoon to Friday afternoon, April 11 to 13; Lethbridge: Saturday afternoon to Tuesday noon, April 14 to 17; Calgary: Tuesday afternoon to Thursday afternoon, April 17 to 19; Victoria: Monday till Wednesday noon, April 23 to 26; Vancouver: Thursday to Saturday, April 26 to 28; Edmonton: Monday and Tuesday, April 30 to May 1; Prince Albert: Wednesday noon to Friday afternoon, May 2 to 4; Saskatoon: Friday afternoon to Monday night, May 4 to 7; Yorkton: Tuesday morning till Wednesday afternoon, May 8 and 9.

For each society the work will include the taking of full upper and

lower impressions and bite, and mounting on an anatomical articulator. The case will be carried toward completion so far as time permits.

At a later session Dr. Switzer will, if desired, correct occlusion in a case where dentures have been made with balanced occlusion and have been

worn by the patient, or, in lieu of this, will give a table clinic on the setting up of teeth.

Should any society prefer not to carry impression case beyond the bite stage, Dr. Switzer will spend the balance of the time upon some other phase of prosthesis.

Dental Care for Ex-Service Men

THE REGULATIONS

I have now received a letter from Christie Street Military Hospital which reads that I am "not considered eligible for dental treatment at the expense of the department." In view of the regulations which I quote below I do not see how I was turned down.

"The following classes, and they alone, are entitled to dental treatment, which is to be given for the conditions hereinafter respectively described and for such conditions only.

"(1) Ex-service men who require dental treatment for conditions certified by the Director of Medical Services to be the result of direct dental injuries contracted on active service.

"(2) Ex-service men who require dental treatment for conditions certified by the Director of Medical Services to be the results of oral infections contracted on active service.

"(3) Ex-service men who are undergoing courses of medical or surgical treatment as in-patients in a hospital

or sanatorium or as out-patients, class 1, certified by the Director of Medical Services to require dental attention as an essential part of the treatment occasioned by pensionable disabilities.

"(4) Ex-service men who report from time to time as instructed for medical or surgical treatment as out-patients, class 2, will be given dental attention when it is certified by the Director of Medical Services to be an essential part of the treatment made necessary by pensionable disabilities, which they are undergoing as out-patients, class 2.

"(5) Ex-service men pensioned for war-service disabilities who on being called in for 'pension examinations' are found to require dental attention may be given such treatment when in the opinion of the Director of Medical Services and so certified by him, pensionable disabilities are directly affected by the teeth and will be definitely reduced by dental services."

(Editor).—There does not seem to be any provision for getting the dentists' opinion. Who was directing dentistry when such regulations were promulgated?

The Dental Educational Council of America

MINIMUM ENTRANCE REQUIREMENTS FOR CLASS A AND CLASS B DENTAL SCHOOLS

The minimum entrance requirements for Class A and Class B dental schools offering a four year course will be the completion, in addition to fifteen units of secondary school education, of one year (thirty semester hours) of collegiate pre-dental education which shall include not less than six semester hours of English, six semester hours of chemistry, six semester hours of biology or zoology, and physics, either secondary or collegiate, equivalent to one secondary school unit.

Students who possess thirty semester hours of satisfactory collegiate, pre-dental education but who are deficient in not more than six semester hours in the required courses that are enumerated may be admitted conditionally, but must remove the deficiency during the summer session following the first year of attendance at the dental school. No student may be allowed to make up entrance deficiencies during the regular session in addition to carrying the full dental course.

Pre-professional education given either by a dental faculty in a dental school or not mainly under the auspices of the academic college does not meet the minimum requirement in the sense in which the Council now expects this standard to be en-

forced. After the close of the 1927-28 academic year, a school conducting such a first year curriculum will not be eligible for a Class A or Class B rating.

The minimum entrance requirements for Class A and Class B dental schools that offer a three year curriculum followed by graduate curricula shall be the completion, in addition to fifteen units of secondary school education, of two years (sixty semester hours) of collegiate pre-dental education which shall include not less than six semester hours of English, six semester hours of inorganic chemistry, three semester hours of organic chemistry, six semester hours of biology or zoology, and six semester hours of physics.

Copies of the Minimum Requirements for Class A Dental Schools by the Dental Educational Council of America will be sent upon request. Address The Dental Educational Council of America, 1108 Union Trust Bldg., Providence, R. I.

WOMEN'S INSTITUTES

Ottawa, Ont., Nov. 11.—A resolution, asking that action be taken in providing medical and dental inspection in the schools of the province is to be sent to the Ontario Government by the women's institutes of Eastern Ontario, it was decided at the closing meeting of the annual convention of that organization here today.

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Pepsodent. They embody dental prophylaxis as modern science sees it.

1—Pepsodent provides a scientifically correct, efficient, yet harmless dentifrice for your patients—one that offers the utmost in tooth and gum protection.

2—It keeps the enamel of patients' teeth highly polished and pearly white. Thus mucin plaque adheres far less readily and teeth are more attractive.

3—As a mildly acid dentifrice, Pepsodent conforms to modern dental preference as against an alkaline formula.

4—Pepsodent actively stimulates

salivary flow, for only in the degree that it is copious, fluid and alkaline does saliva best serve as natural mouth wash and protective fluid.

5—It possesses benefits to the soft, oral tissues. Its use, with vigorous massage, creates greater blood supply, hence greater resistance to bacterial attack. The calcium ion serves as a hemostatic and antiphlogistic agent.

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OBITUARY



DR. ARTHUR H. DAY.

DR. ARTHUR H. DAY

It is with most sincere and profound regret that we announce the death of Dr. Arthur H. Day, of Toronto. Dr. Day was President of the Toronto Academy of Dentistry during one of the years of reorganization, and he gave himself with such enthusiasm and faithfulness to the task that a record membership was registered. During the past few years he has been Chairman of the Educational Committee of the Academy, and in that capacity he rendered invaluable services in connection with the Health Day activities.

Dr. Day was a charter member of the Kiwanis Club of Toronto, and had been chairman of some of its most important committees. He was also one of the original executive of the Fed-

eration for Community Service. A good citizen as well as a leading member of his profession, his passing will be greatly deplored by his many friends.

The funeral mass was held at St. Michael's Cathedral, with interment in the family plot at Guelph, Ontario.

DR. MORVILLE W. RUTHERFORD

Dr. Morville W. Rutherford, dentist, was found dead in his office in the Capital Building, 2498 Yonge Street. Death was due to an overdose of medicine Dr. Rutherford had been using for a stomach complaint. On realizing that he had taken too much of the medicine, Dr. Rutherford telephoned for a doctor, but when the medical man arrived the victim was beyond aid.



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LAVORIS IS A MOUTHWASH. DAILY USE IS EXTREMELY BENEFICIAL. IT IS HEALING AND HARDENS THE GUMS, PURIFIES THE BREATH AND TONES THE ENTIRE ORAL CAVITY.

The late Dr. Rutherford, who resided at 436 Manor Road east, was 36 years of age, and born in Brampton, Ont. He graduated in 1913 from the Toronto College of Dental Surgeons, and was highly regarded by the profession. He was also a talented musician and leader of one of North Toronto's most prominent orchestras. He is survived by his widow and three children. Margaret, aged 12; Jean, aged 10; and Morville, aged 8. The funeral took place from his mother's residence, 11 Marmaduke Street, to Mount Pleasant Cemetery. — THE BOOSTER.

TRUMAN W. BROPHY, M.D., D.D.S.,
F.A.C.D., F.A.C.S.

Dr. Truman Brophy died in Los Angeles of pneumonia on February 4th and was buried in Chicago on February 7th, the funeral services being held at the Fourth Presbyterian Church. The church was most beautifully decorated. The writer does not remember attending a service where the floral remembrances were more beautiful or more artistically arranged. The church was filled with representatives from many walks of life, but more particularly the dental profession.

Dr. Brophy created for himself an unique position in the world, recognized at home and abroad, both by the medical and dental profession as a leader. His sterling qualities were recognized generally. His charming personality made him many friends. His unfailing kindness to the young men was one of his outstanding characteristics, and he seldom forgot a face. The writer feels that he has lost one of his guiding stars and that a pillar has dropped from beneath him.

He was always full of enthusiasm even at his ripe age, and had written only a few days previous to his death, expressing his delight in the fact that a certain meeting was to be held in June and offering in his unique way,

many constructive ideas. It is not given to many of us to be so keenly enthusiastic as he was at seventy-nine. During his lifetime all honours that were in the giving of the dental profession, both at home and abroad, were bestowed on him, and he was a Past President of the American Association of Oral and Plastic Surgeons, and he was recently elected Vice-President of the American College of Surgeons.

Dr. Brophy, in passing through this world has brightened the dark spots for many, and what more could a man do.—F. E. RISDON.

HOLMES C. JACKSON

Holmes C. Jackson, dean of the New York University College of Dentistry, died October 25, 1927, at the Harbor Sanitarium, 667 Madison Avenue, New York City after an illness of many months.

Dean Jackson, who was 52 years old, was born in New York, February 18, 1875, the son of William Holmes and Jane E. Freeman Jackson. He received a Ph. B. degree from the Sheffield Scientific School (Yale) in 1896; the following three years were spent in the same school from which he received a Ph. D. degree in 1899. Two years of study in Germany ensued.

His connection with New York University began in September, 1901, when he began as instructor in the University and Bellevue Hospital Medical College.

From 1905 to 1909 he was with the Albany Medical College working in the field of experimental physiology and director of their laboratories.

Again in 1909 he returned to the New York University and Bellevue Hospital Medical College as professor of physiology and later became assistant dean there.

When New York University took over the New York College of Dentistry and re-organized the entire school into the New York University



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Dental College in 1925, Dean Jackson was selected for its first dean. This was probably the first time in history that a dean of a college of dentistry has not been of that profession.

In a report issued by the Carnegie Foundation for the Advancement of Teaching last year, Dr. Jackson's work in connection with the Dental College with which he was associated at the time of his death, was highly commended. The report gave him credit for the complete re-organization of the work of the school and especially in the arrangement whereby the Dental College is correlated with the New York University Medical School and associated in the clinical work of that school in Bellevue Hospital. Dr. Jackson's aim in dental education has been to bring about a combination between the dental and medical branches for more extensive research.

Dean Jackson was a member of Theta Delta Chi, Nu Sigma Nu, Sigma Xi, American Physiological Society, American Society of Naturalists, So-

ciety of Experimental Biology and Medicine, Society of Biological Chemists, a fellow of the Howey Society of New York, and A. A. A. S. *

He was also a frequent contributor to medical and physiological journals, and author of a "Manual of Physiological Chemistry" and "Laboratory Exercises in Physiology".

Dean Jackson was married to Mary Abby Read of Newark, N. J. in 1901. He is survived by his wife and three children, Kathleen C., Audrey R. and Enid F. The family is at 536 Page Terrace in South Orange, N. J.

Funeral services were held Thursday, October 27, at one forty-five o'clock from the Munn Avenue Presbyterian Church at East Orange, New Jersey, and interment will be made at the convenience of the family.

Pallbearers will be Lee Winter, Ellison Hillyer, John A. Mandel, George B. Wallace, Robert J. Carlisle, Isaac Levine, Pro V. Prewitt, Leroy E. Kimball, James Hess, Edmund Hopper and Abram Hoffman.

FOR SALE—Very reasonable, a Bosworth Operating Room Lamp, in excellent condition. These are selling at \$65, will sell for \$25. Apply, Dr. A. N. Hill, Dundas, Ont.

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Dominion Dental Journal

Vol. XL

TORONTO, APRIL, 1928

No. 4

ORIGINAL COMMUNICATIONS

Root Canal Therapy and the Technic of Root Canal Filling

L. F. KRUEGER, D.D.S., ASSOCIATE PROFESSOR OF OPERATIVE DENTISTRY.

Address given at a Meeting of the Ottawa Dental Society, Feb. 20, 1928, in connection with the Reprints on this subject used in the Faculty of Dentistry, University of Toronto.

Our patients' best interests are not served by extracting all pulp involved teeth, or, on the other hand attempting therapeutic measures and root filling in all cases presenting themselves; and since few people, if any, in spite of good inheritance, good health, good diet, reasonable personal care, and splendid dental attention, entirely escape at one time or another a root canal problem, or any other health problem, it would seem that the practice of dentistry will always in this particular field, offer situations and controversy about as interesting as any with which one may wish to be associated.

To do or not to do, is always the first important question to be settled. The manner of doing it, which is our chief aim at this time, is in many cases at least, the simpler of the two. Upon the condition of the patient, the degree of tissue involvement, and the cause of the pathology, depends the method of treatment.

In many cases diagnosis is easily and readily made. In others only after a very careful and complete analysis of all factors pertaining to the well being and comfort of the patient as well as the longevity of the denture. An incorrect diagnosis is of no value.

Let us classify our patients in three groups:—

Group 1. The vigorous, strong, healthy, young people of good dental family, presenting dental disturbances involving the pulp and root canal, peridental membrane and bone due to:

1. Fracture of teeth.
2. Caries.
3. Dying pulps from improper filling. (a) Traumatic occlusion. (b) Thermal changes. (c) Infective material. (d). Strong drugs.
4. Acute alveolar abscess.
5. Granuloma.
6. Abscess with sinus.
7. Cyst.
8. Condensing.

In a summary of the determining factors in this group the favorable factors far outweigh the unfavorable, and conservation is indicated. It is with this type of patient that root canal therapy and root canal fillings are indicated.

Group 3. The sick. Young, middle age or old, having anemia, diabetes, nephritis, arthritis, syphilis, tuberculosis, heart affections—leave no possible source of infection. Do not attempt root canal work, the unfavorable factors predominate, little or no success is attained.

Group 2. Is the group in between these outstanding easily determined cases, favorable to treatment, or those in group 3, in which extraction is just as easily determined to be the proper procedure. But those persons, young, middle or any age where the going is not good, where their well being is in the balance, for no one knows just where physiology stops and pathology begins. It is in this group of cases, a most careful and definite analysis must be made, involving personal history, family history, consultation with other dentists, the family physician, and maybe the specialist. How absurd to extract a central incisor, a cuspid, or for that matter any treatable tooth for a robust, well individual who prizes these valuable organs of mastication. Leading dentists, physicians, and many people of the better class, and their families carry root treated and root filled teeth many years.

How equally foolish and futile to attempt root canal therapy in constitutional diseases, whether blood, metabolic or nutritional, where we observe disease like diabetes, anaemia, tuberculosis, invariably presenting sore inflamed bleeding gums. How unscientific and unfair to our patients not to study these cases with the physician and having in this manner also secured adequate general treatment, which otherwise might have been deferred too long.

As professional men, rendering a health service considering the comfort and well being of our patients, we must need to, and can quite properly do root canal therapy and root filling for many of our patients in quite as satisfactory and even better manner with our modern aides, than those which have carried many along safely for so many years.

The ease and security in which the patients are grouped into group 1—the fit; 3—the sick; or group 2—the varying degrees between, depends on the preparation and serious thought and study of the individual offering his service. Our diagnosis, prognosis, and treatment are all linked together in biology, physiology, chemistry, and pathology, as well as bacteriology, and our treatment also must be based upon this background as well, which will include anatomy and histology. We are inclined to look upon bacteria as the whole thing, they may be the lesser, at any rate they are only one of several trouble makers.

Since the routine of diagnosis is the same in all three groups, there being no definite line separating one from the other, group 1 and 3 are those outstanding ones, well enough defined, to be safe or unsafe. Attention is merely again called to these two groups, that we may feel we have some phases in this great problem not so difficult and terrifying as some may wish to believe, and within our capabilities of handling successfully.

We consider all root canal problems from the standpoint of focal infection, that is an infective process—feeding bacteria and toxins into the lymphatic and circulatory system, and distinguished from oral sepsis, which is condition of generally filthy mouth, and associated with digestive disorders. We begin weighing the favorable and unfavorable factors from the moment we meet our patient. The general physical condition, the type, size, stature, walk, manner of speech, expression of eyes, condition of skin—we

then note the condition of the mouth—clean or otherwise, regularity and value of the teeth—firm pink healthy mucous membrane, that stippled appearance of the gums, that mark of good metabolism, or the unfavorable, malocclusion of teeth, neglected mouth, pale or congested gums—bearing in mind—are these disturbing factors temporary or more or less recurrent or persistent factors.

These references and statements on physical diagnosis are made as an aid in grouping patients, (which later in our treatment and records may be conveniently used). For the same reason a brief summary of dental diagnostic procedure.

Mouth Diagnosis

Age—a most important factor—In childhood during period of decalcification in case of the deciduous teeth, and complete calcification of the permanent teeth.

Personal history—strong or weak, susceptible to infectious diseases, afflictions if any. We would not add another root operation to a patient who already had several questionable ones, without first attending to these.

Family history and heredity—parents and grandparents long lived, versus short lived and dieting from infectious diseases, in which case we have little success from treated teeth.

Dental history—reflects to what extent previous treatment has been successful or otherwise.

Then Contiguous pathology—has a cellulitis, swollen glands, disturbance of the autra, the eyes, ears and nose, throat or new growth, any association with a tooth or teeth.

Temporary disabilities—cases having had acute infectious diseases such as diphtheria, scarlet fever, typhoid or measles. During the age of puberty, highly nervous irritable state. Pregnancy modesty, fear, indifference, etc. In these states of temporarily lowered vitality and poor metabolism, temporize and later to determine the

best procedure. *Finally the tooth history*:—

If accident—recent, long standing, at what period of calcification.

Kind of pain—steady, intermittent, acute, upon lying down, thermal changes, etc., each with its own significance.

Swellings—amount, hard or soft, tooth associated with if any.

Color—Pulpless teeth loose that normal translucency, by which they are readily detected.

Previous dentistry—how much, what kind, what success, personal care. Age at which pulp became involved, determining thereby the possibility of complete root calcification, or the permeability of cementum and apical tissues. No success with uncalcified root ends.

Much work has been done on permeability of apical tissues by Box & Cahn.

Length of time pulp has been involved—a day, a week, one, ten, or twenty years. Immediate or early treatment naturally is the more favorable, since less tissue is apt to be involved, and yet many pulp involved teeth lie dormant and harmless, some many years, and treatment is quite successful.

Consider also, the usefulness of the tooth, from the standpoint of developing arches. In orthodontia or Prosthodontia, deciduous or permanent, occlusion the tooth is in (such as a 3rd molar with no opposing tooth), condition of the other teeth in the mouth. Whether an artificial restoration or appliance would restore function as well if the tooth was extracted, and of course the willingness of the patient, and skill of the operator.

These briefly then, are the principal clinical determining factors, to be supported by radiographic evidence.

Radiograms, while invaluable and indispensable as an aid in diagnosis, and checking up, should not always within themselves be used to determine procedure.

A radiograph is a shadow graph, representing different densities of tissues. The denser the tissues the lighter the negative, the less the density of tissue the darker the negative, absence of tissue appears black. Gutta percha, root canal fillings appear white, so do amalgam and cements. Silicate fillings appear grey.

Since we have degrees of density in normal tissues as well as in diseased tissues, it is important in radiography to separate these normal variations as well as the abnormal, so that normal land marks are not mistaken for pathology.

Immediately around the root of the tooth and entirely surrounding it, is a fine black line representing the space occupied by the periodontal membrane. It is normally thin even and black on the negative.

Next, a thin even white line, the lamina dura or periodontal lamella, this is a thin dense plate of bone which lines the alveolar socket—normally this line is unbroken.

Normal cancellus bone is well defined white network, enclosing irregular dark spaces, an harmonious blending of black and light spaces, uniform distribution of dark and light areas. In destruction or morbid increase of bone, this uniformity of dark and light areas is changed.

Pathologically we look for evidences of:—

Pulp stones—calcified masses in pulp tissue.

Acute infections. Putrescent pulp, (wet gangrene).

Rarefication—Abscess acute.

Granuloma—Dry canal—low grade infection.

Cysts—Epithelial lining .

Condensation etc.

Primary acute infection of pulp manifests itself first in:—a thickening of the periodontal membrane at the seat of infection. Further development of infection of course breaks down the membrane and lamina dura, and to the extent of the destructive

process we find in the radiogram the rarefied area of irregular outline, known as the acute alveolar abscess.

Granuloma:—low grade infection—dry canal—or in treated teeth and root filled teeth, a dark localized area with distinct outline, invariably involving the root, and as far as cementum is permeable, and may become a cyst, which appears dark in radiogram, about $\frac{3}{8}$ or $\frac{1}{2}$ inch in size, with a thin white line surrounding it, containing fluid usually sterile.

The periodontal membrane is the dental tissue of greatest importance. When it is materially damaged the tooth or teeth are lost. Damage to periodontal membrane is induced in the same general manner that other tissues or organs of the body are damaged.

Thermal and Electrical tests for vitality of pulp, might well be routine; in differential diagnosis an outstanding aid.

Transillumination too, has value, just to the extent that one is familiar with the normal, and with these aids determines or confirms suspicion of pathology.

Causes of Pathology:—are the same in the entire human body, dental or otherwise, they are:—

1. Traumatic.

2. Bacterial.

3. Chemical and Electric.

4. Thermal.

Agencies. Singly or in combination.

Applying these factors to dental disturbance, we find in the:—1. *Traumatic or mechanical*:—Severe. Mild. And varying degrees.

Severe—such as accidents in games, hazardous occupations, motoring, etc., causing fracture of teeth and pulp involvement.

Mild—In over occlusion of fillings and restorations setting up irritation and inflammation of periodontal membrane and pulp, *varying degrees*, as in broaching the apical end of a root damaging tissue.

2. *Bacterial*:—Bacteria appear to be

everywhere, given a break in the tissue, or lowered resistance, they establish themselves. Contact, moisture and warm temperature are essential to growth, the reverse inhibits growth.

3. *Chemically*:—strong escharotic drugs in cavity or root canal, such as phenol near or on a pulp—arsenic, formaldehyde applied on tissue—(desirable to maintain in normal state)—destroys them.

Electrically:—too much voltage in pulp testing.

4. *Thermal*:—Extremely hot or cold foods (switching from ice cream to hot coffee). Grinding teeth for large inlays and their use in bridgework.

Individuals are susceptible to these factors in varying degrees, according to the group they may belong to. Those of high resistance as in Group 1, stand a lot of abuse. Those of marked susceptibility, like those in Group 3, stand very little, if any, abuse, and Group 2 of varying degrees of resistance or susceptibility, likewise are able to defend to a point of their natural ability.

Drugs or methods cannot be said to cure. They either aid or hinder nature in establishing normal conditions.

In our method of treatment or technique, let us not:—

1. Traumatize the tissue by over broaching the apical tissues.
2. Infect them, by introducing bacteria on our instruments or dressings.
3. Apply drugs that will burn the tissues.

Three classes of cases are met in practice:—

Class 1. Those requiring pulp removal and having little or no apical pathology.

Class 2. Those in which the pulp is dead or mummified, and root end is encapsulated. This will include also canals of previous treatment, poorly filled, in which nature beat the dentist in protecting the apical tissues by encapsulation.

Class 3. Those in which there is more or less apical tissue destruction, under the various names of Acute Alveolar Abscess, abscess with sinus, Granuloma, cyst, condensing Osteitis, Excementosis.

The Method of Treatment

Class 1.—Pulp removal purely surgical. Anaesthesia best suited to meet the condition. Removal of pulp in the strictest surgical manner. Mild stimulating dressing to permit healing of apical tissues and then root filling.

Class 2.—Medical treatment, opening of canal, sterilization, complete root filling.

Class 3.—Medical and surgical treatment, which involves sterilization of root, root filling, curretment, trephining, etc.

Class 1—*Vital paining or non paining pulps*:—*Requiring Pulp Removal*.

Requiring anaesthesia for painless removal. Methods available:—

Pressure anaesthesia.

Infiltration anaesthesia.

Nerve blocking anaesthesia.

Strong drugs—arsenic. General anaesthesia, or a combination.

Pressure anaesthesia—simple, successful, reasonably safe. Cavity and dentine must be definitely sterilized, to prevent forcing infection into dentinal tubules and apical membranes. Forma cresol, dio chlorine, phenol etc., are applied to the dentine before entering pulp. Select a drug according to what it is desirable to accomplish.

Infiltration.—Anaesthesia is accomplished by injecting about 2 cc. of sterile isotonic novocain solution over the apex of the tooth to be operated upon, generally successful in most upper teeth. Opening of pulp chamber must have some preliminary sterilization of cavity and dentine.

Nerve blocking:—differs from infiltration in that anaesthesia is injected in the path of the nerve that supplies certain teeth, such as mental and mandibular locations. In which locations this method seems most desir-

able, quite often requires supplemental pressure anaesthesia.

Arsenic method is placed last. It seems to be the least respected of any drug or method. Arsenic is a protoplasmic poison. It has no intelligence, and so often destroys the tissue least desirable to destroy. When all other methods fail try arsenic—it will also likely fail.

General anaesthesia—In temperamental cases, or cases requiring general anaesthesia. For other purpose—e.g. XT. a cavity—and pulp removal. Economy of time and worry.

Pulp removal:—

1. Thorough sterilization of cavity and dentine followed by opening of pulp chamber and securing of continuous walls with the pulp canal, and access to canal. No square edge instrument is to be used and no instrument should cut the floor of pulp chamber.

2. Test anaesthesia, or devitalization with a smooth broach or pathfinder, also estimate length and anatomy of roots and compare with radiograph.

3. Removal of pulp with barbed broach entering canal freely, pass broach side of pulp to apical construction—a half turn to engage the pulp canal, and withdraw. Repeat if necessary.

4. Dry up hemorrhage with sterile paper point, wash canal, dry, dress with mild stimulating drug such as oil of cloves.

5. Wire measurement and radiogram to be taken before sealing or where X-rays are done away from the office. The wire be sealed in with the dressing, until the next visit.

While all pulp removal cases may not be infected, they should be considered and handled as such. Clinically a root canal may be said to be ready for root filling when the dressing is nearly dry and with no odor but that of the drug, the tooth comfortable, and sufficient time having elapsed since pulp removed to permit healing of apical tissues.

Enlargement of canals to permit of placing the root filling selected to best suit the case. This is accomplished by the use of such instruments as Kerr's root canal files, beginning with small size, fitting canal freely, using an up and down motion with a quarter turn to each stroke, reaming and filing, so to speak, until the construction is reached, following this with the next larger size to obtain size of canal desired to suit the material to be used, and the skill of the operator in placing it.

No injury having been done the apical tissues by instrumentation, strong drugs or bacteria introduced by instruments or dressing, we may determine the readiness of canal culturing.

Bacteria need contact, moisture and warmth. They grow rapidly in a test tube with specially prepared nourishment which suits them, and a constant desirable temperature. In root canal therapy destroy them by making their abode uninhabitable, and keep it so by root filling.

Class 2. Putrescent Pulp—wet gangrene.

Causes. Trauma—Bacteria—Drugs—thermal changes, or any combination of these factors.

Pathological Condition—Death and disorganization of pulp tissue.

*Diagnosis:—Symptoms. Active:—*Pain—tenderness—in early stage aggravated by heat and cold—finally in the gas formation stage—intense pain by heat, relieved by cold.

*Prognosis:—*Group 1—favorable.

Group 2—favorable in some.

Group 3—unfavorable.

*Treatment:—*Open tooth—partial removal of pulp or liquefied contents of canal—dressing of formacresol, just enough to convert material into methyl aldehyde, too much and too strong formalin penetrates through apex and destroy good apical tissues which we wish to preserve, or remove contents carefully, not forcing any through apex, dry with paper points,

alcohol and hot air. Dressing—cresote or ionization.

Next visit—Recovery from tenderness is evidence of success of treatment, clean canal thoroughly and cautiously, diagnostic wire—X-Ray. Repeat treatment if necessary. Bacterial test or clinical satisfaction of readiness of canal at third visit. Fill apex with cu amalg.

Class 2—Dry Gangrene:—root end encapsulated—no apical pathology—cause likely trauma, alone or with low grade infection.

Symptoms:—Discoloration of tooth.

Prognosis:—Group 1. Favorable.

Group 2. favorable in some cases.

Group 3. unfavorable.

Treatment:—Same as wet putrescence, except there are only dry remnants of pulp—nothing to convert with formacresol. Apical end is sealed—open canal wash with alcohol—dry. Dressing of cresote or cloves. Repeat if necessary, and establish readiness for root filling by culturing, and clinical evidence, and fill canal. No broaching or reaming through apex of root.

Class 2. Granuloma:—Appearance of rarefaction at apex of root, extending rootwise to extent of permeable apical tissues, fibrous tissues walled off, regular outline, may develop into cyst.

Cause:—Pulpless or treated tooth with low grade infection; or previous trauma. Strong drugs thermal agency.

Prognosis:—Group 1. Favorable.

Group 2. ????

Group 3. Unfavorable.

Treatment:—Open tooth, sterilize canal, drain apical tissue with paper points, dressing, clove or cresote. Repeat treatment until dryness of canal is obtained, and clinical and bacterial evidence is favorable—fill canal. In all cases diagnostic wire—strict surgical, mechanical and drug principles as before laid down.

Under class 1 cases:—we often find a condition of pulpitis not usually requiring pulp removal, caused by:—

Trauma such as biting on shot in

game meat; shells from nuts or hard foreign materials in foods.

Colds, influenzas, congestion of Max. Sinuses, by extension of inflammation when roots are near or in antrum.

High Blood pressure cases. Pressure high in teeth causing pain.

These inflamed pulps usually subside and become normal. When the traumatized tooth has been put to rest, the congestion in sinus subsides, or the blood pressure is lowered.

Root canal filling materials.

To meet the necessary requirements should be:—

non-irritating.

non-shrinking.

non-absorbing.

non-soluble.

Radiopaque.

Not discolor the tooth.

Reasonably easy to manipulate—adapt and condense to all parts of the canal, and capable of being removed if necessary without mutilating the root.

Many materials and combination of materials have been made use of since root canal filling has been practiced.

Those in vogue at this time and seemingly rendering good service, may be taken up under three heads.

1. *Vegetable Origin.*

Gutta Percha.

2. *Mineral.*

Copper Amalgam.

3. *Chemical.*

Antiseptic materials.

Copper amalgam is also an antiseptic.

Gutta Percha:—with chlora percha.

with chloroform and resin sol.

with other combinations.

Lubrication of dry sterile canal with eucalyptol—small quantity of chlora percha, with the gutta percha, thoroughly condensed in small pieces or sections, is a method that has been quite generally taught for some years, and has many followers and reasonable success.

Copper Amalgam:—has recently attracted considerable attention. It would seem it has all but a few of the

desirable qualities. The most undesirable is its difficulty of removal, discoloration is another factor, but if only the apical $1/3$ is filled and the balance with oxchlorid of zinc cement and a gutta percha point—this becomes almost a negligible factor. Cu A. both theoretically and practically seems to meet the requirements of a root filling best of any.

Chemical:—Antiseptic materials are divided into two classes. Those giving off their properties slowly like thymal aristol.

Those giving off their properties quickly like Formalin.

Those giving off their properties quickly, irritate the tissues and also create a space more rapidly, for no matter how well filled a canal may be, if the filling is to give up something, it cannot at the same time keep it.

Those less volatile—have preserved teeth, and given the patient varying degrees of service. It is believed by some experienced men that materials of this kind, selected according to the requirements of a root canal filling, so nearly as this is truly possible, and placed with an understanding of what actually takes place, between tissue and filling, and what is to be expected as to the safety and service they do fit in at times, if only as a temporary expedient.

It is noticeable that none of the materials available for root filling, meet all the requirements laid down. We hope these conditions will soon be met in some way. In the present, as in the past, let us apply what knowledge we have, use our efforts for betterment in technic, remembering we are not to cause mechanical injury, chemical irritation, or introduce bacteria. Aiding as we go those endeavoring to make nature give up her secrets and mysteries.

Conclusions:—

1. Consider the usefulness of the tooth to patient or Dentist.

2. Consider the position in the mouth, and the anatomy of the tooth.

3. Classify teeth according to Pathology:—

Pulp removal cases.—Class 1.

Pulpless teeth, non-painful, no apical tissue involved. Class 2.

Pulpless teeth with any of the pathological conditions known to dentistry. Class 3.

4. Make correct physical and dental diagnosis placing patients in:—Groups 1, 2 or 3, and enter as part of record with any specific information.

Remember that causes of disturbances, dental or otherwise, are:—

1. Trauma.
2. Bacteria.
3. Chemical and electrical.
4. Thermal. Agencies.

In root canal therapy avoid traumatizing apical tissues by over instrumentation.

Prevent introduction of bacteria on instruments or dressings.

Avoid tissue destroying drugs.

Follow strict surgical principles.

Fill root canal solidly to end, practice and perfect technic on extracted teeth.

Radiogram before treatment with diagnostic wire in place, when apical end is filled. Make a clear record of:—The case: — Group patient belongs to;—Class of Pathology;—Treatment employed; filling material used.

Radiograph at intervals to observe results. It is from records of long periods of time we can draw conclusions. Surely we can handle successfully a high percentage of Class 1-2-3 cases for Group 1 patients.

A reasonable number of class 1 cases for Group 2 patients.

It seems reasonable to call successful, treatment of cases of pathology in evidence by radiogram, when this radiogram evidence of pathology, formerly present, has later changed to normal, and the tooth comfortable.

ROOT CANAL THERAPY

*Order of Procedure in Devitalizing a Dental Pulp Using Pressure Anaesthesia**1st sitting.***X-ray.**

Antiseptic dressing.

2nd sitting.

Sterile field.

Anaesthesia of Pulp.

Remove Pulp.

Bacterial test made from the pulp.

Diagnostic Wire.

X-Ray Picture.

Dressing.

3rd sitting.

Remove Dressing.

If bacterial test is negative and clinical evidence favorable, fill Apical end of Canal.

X-Ray.

Fill balance of Canal.

Oxychloride of zinc covering.

Follow the same routine if any other form of anaesthesia is used.

*Order of Procedure in Devitalizing A Dental Pulp With Arsenic**1st sitting.*

X-ray picture.

Antiseptic dressing.

2nd sitting.

Sterile field.

Apply the Arsenic.

Seal.

3rd sitting.

Sterile field.

Remove the pulp.

Bacterial test (made from the pulp).

Diagnostic wire.

X-ray.

Dressing.

4th sitting.

Sterile field.

Remove the dressing.

If the bacterial test is negative and clinical evidence favorable make Apical Root Filling.

X-ray.

Fill balance of Canal.

Teeth with non-vital pulps not pain-
ing apical end of root closed by in-
capsulation of calcific deposits. No
apparent periapical involvement.

*1st sitting.***X-ray.**

Remove contents of Canal.

Antiseptic dressing.

Seal.

2nd sitting.

Sterile field.

Remove dressing.

Fill Canal.

And Crown.

Teeth with non-vital pulps, not pain-
ing, Root not filled, Periapical tissue
not involved.

WET GANGRENE OR PUTRESCENT PULP*1st sitting.***X-ray.**

Sterile field.

Open into pulp chamber.

Sterilize use strong agent, soluble
in water in Crown only, seal.

2nd sitting.

Sterile field.

Remove Root Canal contents
cautiously. (?)

Diagnostic wire.

X-ray.

Bacterial test—broth in Canal.

Seal.

3rd sitting.

Sterile field.

If bacterial test and clinical evi-
dence favorable, fill Canal at Apex.

X-ray.

Fill balance of Canal.

DRY GANGRENE*1st sitting.***X-ray.**

Sterile field.

Open into pulp chamber.

Sterilize use mild agent in tooth.

Seal.

(note) These Canals can be opened
farther than in wet gangrene.

2nd sitting.

Sterile field.

Remove contents of Canal, if any.

Diagnostic wire.

X-ray.

Bacterial test, broth in the Canal.

Seal.

3rd sitting.

Sterile field.

If bacterial tests and clinical picture favorable, fill Canal at Apex.

X-ray.

Fill balance of Canal.

ROOTS IMPERFECTLY FILLED AS SHOWN IN X-RAY PICTURE

Whether such roots should be opened, treated and refilled depends upon many factors, family history, dental history, tooth history, age at which pulp was devitalized, length of time the pulp has been dead, acute infections, etc.

Teeth with non-vital pulp not paining with periapical involvement and no sinus.

Chronic proliferating periodontitis

Chronic rarefying "

Chronic alveolar abscess "

Chronic granuloma "

Chronic Cyst "

Physical condition of the patient and the condition of the peridental membrane determine the treatment, the latter of which is made out from the history, X-ray and physical appearance of the tooth.

MEDICAL TREATMENT

1st sitting.

X-ray.

Sterile field.

Open Root Canal.

Insert a dressing.

Seal.

2nd sitting.

Sterile field.

Remove Root Canal dressing.

Open through the Apex.

Note: moisture, odor, or pain.

Insert dressing.

Seal.

3rd sitting.

Sterile field.

Remove dressing.

Note odor, moisture or pain.

Place paper cone in Canal.

Apply vacuum test with water syringe.

Diagnostic wire.

X-ray.

Seal dressing.

4th sitting.

Sterile field.

Remove dressing.

If clinical picture and bacterial test favorable, fill Apical end of Root.

X-ray.

Fill balance of Canal.

If conditions are unfavorable, repeat the dressing and if again unfavorable, apply surgery or give rest treatment.

MEDICAL AND SURGICAL TREATMENT COMBINED

1st sitting.

X-ray.

Sterile field.

Open into pulp.

Apply disinfectants.

Seal.

2nd sitting.

Sterile field.

Remove dressing.

Remove Root Canal contents.

Sterilize and dry Canal.

Diagnostic wire.

X-ray.

Bacterial test, broth in the Canal.

Seal.

3rd sitting.

Sterile field.

Remove dressing of broth and place in Incubator.

Seal.

4th sitting.

Sterile field.

Remove dressing.

If Bacterial test is negative, fill Apical end.

X-ray.

Fill balance of Canal.

If conditions unfavorable:

5th sitting.

Trephine over root and remove infected area.

Pack with gauze or if conditions favorable close the wound at once.

If the canal cannot be made perfectly dry or if moisture leaks into the canal between treatments, then trephine at once and inject solutions through the tooth and artificial sinus. At the first sitting following the

trephinement fill the root canal and treat the outer wound as indicated above. Silver solutions are invaluable in these cases, as well as copper amalgam.

If a considerable area of the Apex is devoid of Periostium, the same treatment as above may be followed but in such cases all the root end denuded should be removed and the cut surface coated with silver solutions or covered with copper amalgam.

Teeth with non-vital pulps not painful, with a sinus.

MEDICAL TREATMENT

1st sitting.

Open through tooth to apex.

Force saline solution through tooth and sinus, using abscess syringe.

Diagnostic wires.

X-ray.

Force antiseptic drug through tooth and sinus using unvulcanized rubber.

Seal with gutta percha or stopping.

2nd sitting.

Sterile field.

Remove the dressing.

If all clinical factors are favorable, fill Apical end of Root.

X-ray.

Fill balance of Canal.

If Clinical factors were not favor-

able, repeat the injection on two to four successive days and the last day use pure phenol and then fill the Canal.

If the sinus does not remain closed and the X-ray shows roots end involvement, root resection should be resorted to.

Teeth with non-vital pulps with a sinus of long standing.

SURGICAL TREATMENT

1st sitting.

X-ray.

Periodontal involvement.

Open Canal.

Force saline solution through Root and Sinus.

Place strong disinfectant in Canal and force through Apex with rubber.

Seal.

2nd sitting.

Sterile field.

Remove dressing.

Put sterilizing agent in Canal.

Fill Apical end of Canal.

X-ray.

Fill balance of Canal.

3rd sitting.

Resect or curette the Root end and surgically clean away the infected area. Treat surgical wound as indicated.

Technique of Root Canal Filling

DEPARTMENT OF OPERATIVE DENTISTRY, ROYAL COLLEGE OF DENTAL SURGEONS.

Preparation of Operator and Assistant

The operator and assistant should be dressed for aseptic operating. Hands should be scrubbed and dipped in alcohol. It is not necessary for the hands to touch any of the materials or instruments which enter the canals, rubber gloves may be worn.

Preparation of Equipment for Operation.

All instruments used in any former operation should be removed and only those of immediate necessity kept on the table. The whole root canal equipment should be brought forth to the table sterile and ready for use without being handled by operator or assistant. The instruments and materials may be taken directly from the sterilizer as they are needed or from towels containing them which have been sterilized.

Among the equipment should be a number of paper absorbent cones, cotton rolls, cotton pellets, rubber dam, cotton wipes, root canal cleansers, root canal reamers, and root canal pluggers of various sizes and forms as well as dressing forceps and other pluggers.

Preparation of the Field of Operation.

The patient's mouth should be sprayed and rinsed with flavored water (wintergreen or peppermint).

Rubber dam put in position.

Teeth exposed through rubber dam wiped off with alcohol or phenol.

Sealing removed.

Cavity wiped with alcohol and dried with warm air.

Dressing removed from canal and tested for odor and moisture.

If the dressing is dipped into H_2O_2 effervescence will indicate presence of organic matter.

Bacteriological test should be made.

Note.—See reprint on the management of infected root canals.

Drying of Root Canals.

With paper absorbent cone carry alcohol or acetone into the canal and apply hot air. If using a chip blower draw the air through the alcohol or bunsen flame into the rubber bulb, thus sterilizing the air, and gradually blow into the canal. If using compressed air this is filtered by passing through a vapour bath. Now pass a heated broach or root canal plugger into the canal as often as necessary or until all fizzing ceases. The canal is now dry and ready to receive the filling.

Indications for Use of Chloro Percha and Gutta Percha Cones.

1. All root canals freely opened to the apex, but which have not large apical openings.
2. Canals in which posts are to be cemented.

The Technique of Insertion.

Moisten the canal with oil of cajuput or eucalyptus. Wipe out excess of the solvent with cotton. Pump chloro-percha into the canal with a small broach, a paper point may assist at first, then pump with a smooth broach several times. It is usually wise to pump until the patient gives response. If the canal is hard to fill use unvulcanized rubber as in pressure anaesthesia to force the chloro-percha home. Select a gutta percha point which approximately fits the canal to the apex and pass it up the canal, perhaps withdrawing and reinserting several times until it is well settled in place. Several cones may be required to fill the canal. If the patient responds to any pressure wait a few minutes then press the cone

farther. An easy way to handle a cone is to flatten the large end with a pair of pincers. When the cone is passed into the canal as far as it will go, pack and force it home with a root canal plugger, being careful not to punch holes in the cone and thus make a porous mass. To accomplish this use a wad of cotton or paper over the gutta percha to receive the thrust of the plugger. Cold air blown on the gutta percha while packing facilitates the evaporation of the chloroform and makes a denser mass. Warm air or warm instruments expand the gutta percha. Cover the gutta percha with oxy-chloride of zinc or oxy-phosphate with 5 per cent. red oxide of mercury added to prevent penetration of bacteria.

Indications for the Use of Sectional Method of Filling With Gutta Percha.

1. Root canal large enough to be reached directly with a straight plugger.
2. Canals in which posts are to be used.

The Technique of Insertion.

Select a root canal plugger of such size as will only go to within three or four mm. of the end of the root. As a guide use a small square of rubber dam on the shank of the plugger. Select a piece of gutta percha cone the size and length of the apical portion beyond the end of the plugger. This is determined by comparing with the length of the diagnostic wire. There may be a kink made in the plugger on the level of the occlusal surface of the crown which can be used as a guide in placing the first piece. This is only necessary in case the plugger is small enough to pass beyond the apex. Press it against the large end of the cone and in line with its long axis. The canal being dry and then lubricated with eucalyptus it is ready to receive the filling. If the plugger is too large to reach beyond the point selected and the cone is **only long enough to reach from that point to the apex**, there is no danger of

pressing it beyond the apex, but when the next piece of four to five mm. is selected it can push the first piece through if packed with too much force. If the canal is thoroughly filled with gutta percha for two-thirds of its apical length the balance may be filled with oxy-chloride of zinc. Before the cement is inserted an X-ray may be made to determine if the filling has reached the right distance.

Indications for the Use of Rosin Solution and Gutta Percha Cones.

1. Fine canals which can be thoroughly dried.
2. Canals which have been the seat of septic infection.

The Technique of Insertion.

Flood the dry canal with a thin solution of rosin in chloroform, pumping it in with a paper cone. When the canal is full pass a fine broach to the apex and let out any air that may be entrapped. This is of vital importance. (For X-ray purposes dip the broach in oxide of bismuth and pump into the canal.) Now pass the gutta percha cone of suitable size into the canal. Have a rigid cone and pass it half way up the canal and pump up and down forty or fifty times as it dissolves, pass further toward the apex. The solution will enter the tubuli. When the canal is full, pack down with cold plugger and wipe away any excess rosin solution. Rub steel pluggers on paraffin or cocoa butter to prevent them sticking to cone. Fill pulp chamber with oxy-chloride of zinc or oxy-phosphate to which has been added 5 per cent. of red oxide of mercury.

Indications for the Use of Paraffin Compound.

1. Large canals which are freely opened.
2. Under fillings where no force or pressure is going to drive it through the apex.
3. If apical irritation is feared.

The Technique of Insertion.

With a paper cone moisten the canal with pure paraffin oil or liquid albu-

line. Now place a paraffin cone in the canal and pack it to place with a heated root canal plugger (about 60C) add enough paraffin in to completely fill the canal and have the whole in a liquid state so as to have a homogeneous mass when the broach is removed. Pass a gutta percha cone, or better, a copper wire, into the canal and leave permanently. Seal the pulp chamber with oxy-chloride or oxy-phosphate to which had been added 5 per cent. red oxide of mercury.

The Technique of Filling Root Canals With Copper Amalgam.

Before describing the technique it may be wise to give a few reasons for introducing another method of root filling. In the Department of Dental Research of the University of Toronto, it has been found that copper amalgam has power to inhibit the growth of bacteria almost permanently, and without apparent irritation to human tissue. Based upon this fact, Dr. F. C. Husband, of Toronto, and others, have been filling root canals with copper amalgam for several years. The results are highly satisfactory.

Indications.

1. Especially recommended following infected cases.
2. Canal must be open to the apex, as in the sectional method.

The amalgam must be freely plastic.

The plugger must reach almost to the apex.

Begin with a small piece and carry a little ahead of the plugger right to the end. Use a short oscillating motion so that the mass in the canal will become plastic. Then add more until the apical third or less is filled. Finish with oxy-chloride. If the mass is not kept plastic by tamping or motion it will harden and not reach the apex. All traces of amalgam must be removed from the gingival third of the canal to avoid discoloration of the neck of the tooth.

Indications for the Use of Bismuth Paste.

1. Roots with large apical openings

from absorption or lack of development.

2. Temporary teeth.
3. Punctured roots.
4. Openings through the bifurcation.

The Technique of Insertion.

Place the jar of paste in a hot water bath and when the mass is liquefied carry some to the tooth with a syringe. The nozzle of the syringe must be warm and large enough to take up and discharge the paste. It may be necessary to pack unvulcanized rubber around the nozzle to force the paste into the canal or use rubber as a piston as in pressure anaesthesia. A gutta percha cone may now be gently passed into the canal.

Indications for the Use of Mummifying Paste.

1. Fine root canals where it is impossible at the time to remove all the pulp.
2. Temporary expedient.

Technique of Insertion.

Moisten the canal with unirritating essential oil. Dry out the excess of the lubricant with cotton. Pump the mummifying paste into the canal with a smooth broach. If the canal is hard to fill use unvulcanized rubber as in pressure anaesthesia to force the mummifying paste home. Select a gutta percha cone which approximately fits the canal, perhaps withdrawing and re-inserting several times until it is settled in place. Cover the mummifying paste with oxy-chloride of zinc or oxy-phosphate to which has been added 5 per cent. red oxide of mercury.

MATERIALS FOR FILLING ROOT CANALS.

Making of Chloro Percha.

Take a jar that will hold about two to four ounces, fill it about three-quarters full with base-plate gutta percha cut into squares or strips small enough to settle well into the bottom of the jar. Pour over this enough chloroform to cover the gutta percha fully. Allow it to stand for a few

hours, closely covered. Shake well and much sediment will fall to the bottom; gutta percha now used are loaded with oxide of zinc and other materials that are not suitable ingredients of chlora-percha for filling root canals. To remove these, strain through cheese cloth into a wide mouth bottle with an outside cover, which is not so likely to become smeared as a cork that fits inside. Finely ground thymol crystals may be dissolved in chloroform and added or may be thrown into the liquid undissolved, use about two or three drachms of thymol to an ounce of gutta percha. As the chloroform evaporates add oil of cajuput to the solution to keep it liquid. After some months all of the chloroform will have evaporated, and the gutta percha will be held in solution by the oil of cajuput. This chlora percha will be ropy and tenacious, not so short grained as that made from base-plate gutta percha unstrained. It may not be radiopaque.

Making Gutta Percha Cones.

From a good sample of pink base plate gutta percha cut strips about double the diameter of the finished cone. Place these on a soap stone heater or glass slab, warm sufficiently to heat the gutta percha slightly, but not enough to make it sticky. Select two pieces of heavy plate glass about three by four inches; warm these sufficiently to keep the gutta percha plastic when the pieces are placed between them. As the pieces of gutta percha are rolled back and forth between the plates of glass, two edges are held closer together than the opposite edges, thus making the gutta percha as pointed as desired.

Points may be made any size or length depending upon quantity of gutta percha used and the pressure, plasticity and time spent in rolling. Points are not ridged for several hours after they are made. Gutta percha cones put in a wide mouth bottle and covered with alcohol will thus be kept sterile and ready for use.

Pink gutta percha is preferable to white, because the color makes a sufficient contrast to the tooth tissue to be easily followed if removal should be necessary.

Howe's Solution.

Solution A.—This consists of a saturated solution of silver nitrate in water to which is added little by little strong ammonia. As the ammonia is added a dark precipitate of silver oxide is thrown down. This is soluble in excess of ammonia, therefore continue adding the ammonia until the solution becomes clear.

Solution B.—This consists of a 25 per cent. solution of formalin in water.

These two solutions must be kept in separate dark-colored glass bottles, with glass stoppers, and should be away from the light as much as possible. They work better if they are freshly prepared, but are still good after a considerable time if kept as recommended.

Note.—Oil of cloves may be used instead of the formalin.

Rosin and Chloroform Solution.

RosinGrs X
ChloroformOz.

Place the rosin in a wide-mouth bottle and add the chloroform. Let stand for a few hours when it will be ready for use. A little vaseline put on a glass stopper of the bottle will help to keep the chloroform from evaporating.

Paraffin Compound.

Thymol 2 parts
Bismuth trioxide30 parts
Hard paraffin (melting
point) 56-58 deg C.
(133-136 deg F.)...68 parts

Bismuth Paste.

Bismuth sub-nitrate...30 parts
Yellow vaseline60 parts
White wax 5 parts
Paraffin 5 parts

The solid portion or the body is usually made from tannic acid, alum, oxide of zinc, thymol, aristol, iodoform, iodol or calcium phosphate.

The liquid from glycerine, alcohol, creosote, oil of cloves.

What Part Should the Dentist Take in Rendering Health Service in Medicine, Surgery, Anaesthetics and Dietetics

A. E. WEBSTER, M.D., D.D.S., M.D.S., F.A.C.D.

Read before the Elmira Dental Society, N.Y., March 23., 1928.

There are many things to be considered in formulating answers to these questions. Primarily they reach back to the division of labor and have within them all the relationships that are to be found in organized society. What the legal rights are may be very positively stated, but usage, habits and practice may widen or narrow these rights. What the legal and acquired rights of a calling are vary with the times. Often professions do not practise their callings as broadly as they might, because they would thereby overlap other callings and be a source of friction and hindrance to progress or because they do not know enough.

In an aggressive calling like osteopathy or like dentistry there is a rapid change of scope from time to time which makes it very difficult to define or lay down their encircling walls.

The teaching of professional institutions, the writings of the leaders of a calling and textbooks of the profession constitute the basis or scope of a calling. Whatever is taught in college is recognized as the teaching of the profession and is recognized in a court of law.

It is fitting that in an address on the scope of dentistry I should refer to the opinion of that sturdy citizen and jurist, Hon. David Mills, Minister of Justice of Canada in the Laurier administration, Professor of Medical and Dental Jurisprudence in the University of Toronto, who says "a doctor of dentistry may practice medicine in so far as his medical treatment

is incidental to his profession as a dentist. In this respect he stands in the same relation as a surgeon who is entitled to practise medicine in so far as his medical treatment is called for on account of a surgical case. Thus a dentist may find that the affection of the teeth is due to a constitutional condition of his patient and would thus be entitled to treat his patient medically to relieve pain. If all the teeth appear sound, he must consider whether his duties are not to treat the case constitutionally by the use of medicines rather than surgically by the forceps. He is as far as the treatment of the teeth is concerned a mechanic, a surgeon, and a physician and the responsibility rests on him in every case to decide in what capacity he must act."

The definition of Dentistry varies with the dental acts. There is a notion in the minds of many professional men who hold licenses to practise that such licenses in some way protect the holders from the action of the law. This is only true in so far as it protects the holder against prosecutions for practising without a license. But it does not protect him against actions for damages because of harm done the patient on account of want of skill. If an unlicensed person does harm to his patient he is liable to the patient for damages in no different way from the licentiate. There is of course more difficulty in proving skill if the operator has no license, but it is conceivable that a thoroughly competent dentist might not have a license because of some technicality.

Medicine

The dentist should have a clear line of action in relation to his medical confreres. All division of labor or specialization should be in the best interests of the patient and of the public generally. If the division fails in this it will not last as a specialty. Dentists should refrain from prescribing drugs for the treatment of diseases other than those caused through the mouth and teeth. In general it is good sense for the dentist *not* to write prescriptions for drugs to be administered internally, nor should he be recommending drugs for this and that complaint. If a dentist's patient is suffering from a severe rhinitis, for the good of the patient and the dentist's own reputation such persons should be sent to a physician. The Golden Rule might well be kept in mind here. "The shoemaker should stick to his last, Darwin to his monkeys and the dentist to his teeth."

There are quite a number of both acute and chronic manifestations of local and general diseases in the mouth in which it is very difficult to make a diagnosis. Among those general diseases which may have marked mouth manifestations are to be found syphilis, diphtheria, measles, typhoid, smallpox, uremia, diabetes, scurvy, pregnancy, gout and so forth. Drug manifestations; mercury, potassium iodid, arsenic, lead, bismuth, phosphorus and copper. Extensions of skin diseases to the mouth such as eczema, erysipelas, ringworm and herpes zoster. Associated with most of the diseases mentioned will always be found local irritations of both mechanical and infectious origin. Clearly then, practically all cases of stomatitis need the treatment and protecting care of the medical and dental practitioner. Every dentist has seen cases of stomatitis of acute local gingival origin unsuccessfully treated by his medical colleague and what is still more significant he himself has treated cases of stomatitis of systemic origin without avail. Stomatitis, like

focal infection, is due for a much needed clinical research.

Surgery

In Surgery it is still more difficult to define the scope of the dentist because he has for many decades been known as a Dental Surgeon. It is conceded, that he may do the surgery required on the teeth and the dental pulp and the tooth membranes and the socket. This, of course, includes the extraction of teeth. According to the Honorable David Mills any disease about the mouth consequent upon a disease of the teeth such as acute osteomyelitis, acute or chronic alveolar abscess, etc. should be attended to by the dentist. Surgery required in the mouth because of defects or deformities is in the dentist's field when the defect is found in the teeth. It is questionable if the dentist should undertake such operations as closing of a cleft palate without special training.

Again when we come to new growths such as carcinoma or sarcoma I think they are quite clearly outside the dentist's field once there are any symptoms outside of the teeth or their membranes. Any surgical disease of the mouth, such as syphilis, septicemia, erysipelas having a systemic influence is outside the dentist's field.

Just here comes the place of the specially prepared and trained dentist who is styled an oral surgeon. Such special surgeons are sometimes dentists and sometimes general surgeons, and are often doubly qualified. It would seem that to practise oral surgery legally the M.D. degree is not necessary nor is the D.D.S. degree necessary, either will do. All that seems to be necessary is to be able to satisfy one's confreres and one's patients that he has skill and experience.

The treatment of accidents is a problem. Most such cases go to the general surgeon first and if he thinks a dentist is of any help to him he calls him in as an assistant (should be, associate). Accidents to the teeth are for the dentist, but as soon as the jaws or soft tissues are involved then

the general surgeon is usually called. Not infrequently the dentist takes complete charge of simple fractures or dislocations. Generally the patient who has had an extensive accident to his mouth or teeth is best served by the co-operation of the dentist and the general surgeon. The well-trained oral surgeon can give better service than either or both dentist or general surgeon.

Anaesthesia

General anaesthesia has always been a contentious question among medical jurists. The medical man thinks no one but a qualified physician should give anaesthetics. He claims that no other calling gives the necessary training in physical diagnosis required to give general anaesthetics safely. He forgets that dentists have given general anaesthetics with a lower death rate than physicians, and that the dentists give anaesthetics mostly to comparatively well patients. And more than all that, the dentist has the traditional right to give the anaesthetics he discovered. He popularized local anaesthesia and block anaesthesia. Legal or no legal right, the dentist by common consent and constant practice and experience is going to continue in the future as in the past to administer both general and local anaesthetics.

The dentist is wise who calls in his medical confreres in all critical cases of anaesthesia or where he wishes another to share the responsibility. It is foolish for a dentist to take any chances with another man's sick patients. As time goes on fewer and fewer teeth will be extracted at one operation and dentists will call in the specialized anaesthetist more and more. It must be borne in mind that in the final analysis a physician must give the death certificate.

Dietetics

For many, many years dentists have been of the opinion that the structure of the teeth is much influenced by diet, and, that because of defective tooth structure dental caries

is greatly increased. I made this statement knowing that Black, corroborated by Tomes, made the observation that the difference in the amount of calcium in susceptible and immune teeth was not enough to account for the variations in decay in different people. Sim Wallace holds that dental caries is not dependent upon the amount of calcium nor even the perfection of the structure of the tooth tissues. Pickerill, Wells, McCollum, Mellanby, Howe and others have satisfied themselves that defective or sound teeth can be developed at will by a dietetic regimen. Operative dentists have long been of the opinion that defective enamels are more liable to decay than sound ones. So convinced upon this point is Dr. Hyatt that he would cut out all fissures in teeth just as soon as they are recognized.

So much for defects of structure and their influence on dental caries. Sim Wallace and a great number of others are firmly of the opinion that diet not only influences the structure of teeth before eruption but also influences teeth to decay or not to decay after eruption. Dentists have observed that those people who live on a highly carbohydrate diet have more caries than others.

We introduce the matter of diet in this manner so as to show that dentists have a vital interest in the subject both as dentists and as public health servants and as such have every right to take part in its discussion. A great deal of our present day knowledge of dietetics was begun or stimulated by those interested in the dental aspect of the subject.

The dentist can establish his right to take part in dietetic improvements. But since diet has to do with all the functions of the body, the dentist must not think that he is the director of sick people's diet. The dentist is on dangerous ground when he lays down a dietary regimen for a pregnant woman who without his knowledge

might be a diabetic or a nephritic. Likewise it is hardly within his province to prescribe baby feeding. The dentist, because of his interest in his patients' teeth, however, should take part in every movement to improve the diet of the nation, but just as soon as he prescribes certain special foods, the quantities, the method of preparation and the method of administration then he is in another specialist's field. The person who is responsible for the

patient's general health should prescribe the diet. The dentist should, however, at every opportunity consult with the general practitioner in matters of diet and insist on his viewpoint being heeded even to the extent of going before the bar of public opinion, but in no case should he be foolish enough to make himself a nuisance to individual medical practitioners whose patients happen to consult him about their teeth.

Report of Research Committee of Dental Faculty of Dalhousie University

In conformity with the request for a synopsis of the work done in the past by the research committee of the Dental Faculty the following brief statement is presented:

After a room had been provided and equipped in a very modest way owing to lack of funds the late Dr. Ryan and the writer began a series of investigations on the treatment and filling of putrescent root canals. In casting about for suitable materials other than those then in clinical use, our tentative choice fell on Picric Acid. This acid was an agent constantly used in histological technique owing to its properties of extreme and ready penetration and fixation of tissue. It was thought that these properties might be of use in root canal treatment. Experimental and clinical studies were carried on for a year. The material was found to have many advantages, but was finally rejected owing to the difficulty of controlling the bright yellow staining effect. A report on the research was made to the Nova Scotia Dental Association at the annual session. It was accompanied by many tooth sections prepared for microscopical use. These showed, from the standpoint of root canal filling, that in our hands, a refined resin

with G. P. points gave better results than any other method tried.

A further study of possible reagents was made and the same investigators decided on Chloric Acid as a basis of experiment. After about two years' work of a very encouraging nature a tentative formula for clinical use was arrived at and used in the dental infirmary and our own practices with results decidedly superior to those of the usual methods in vogue. Our results have been confirmed by several practitioners to whom the formula has been given in order to test the material.

This research lapsed owing to the death of Dr. Ryan. It has never been written up because there are still a number of points in the chemistry of the reactions taking place requiring further investigation.

The writer, while teaching Dental Histology and Embryology, was struck by the similarity in form of the enamel rods and epithelial cells. It was undoubtedly due to force exerted on colloidal material in a plastic state. A strikingly similar effect was attained in a long series of experiments on chemical diffusion and reaction in gelatine. The results of the investigation were presented before the Nova Scotian Institute of

Science and an abstract may be found in the transactions of the institute.

In 1922 the writer was invited to undertake an exhaustive examination of the dentition of the Western and Central Eskimos, for the Canadian Government. Thirty-five skulls collected by the Canadian Arctic Expedition under the leadership of Vilhjalmur Stefansson, 1913 to 1918, were made available by the Canadian Government. The research work was interesting, occupying nearly a year. The results are to be found, together with very beautiful photographs, in The Report of the Canadian Arctic Expedition, Vol. XII., published at Ottawa.

At the present time funds are available, and the research committee

is undertaking a careful investigation into the physical properties of the plaster of paris found in the Maritime Provinces. Some of this plaster is probably the finest found on the North American continent. Most of the literature on the subject in English and German has been consulted and we hope to check up on Dr. Sodean's very recent research, prior to his death, with the hope of carrying it farther. The necessary instruments have been designed and plans completed. The work will of necessity be slow, but an interim report will probably be available within a year.

Yours sincerely,

STEPHEN G. RITCHIE,

Chairman, Committee on Dental Research, Dalhousie University.

Technique for Root Canal Filling

Prepare canal as for Coolidge Sectional Method. Reasonable enlargement of canal is necessary with choke bore or shoulder at apical end. This shoulder preparation, as has been pointed out in connection with the Coolidge method for gutta percha, enables the operator to more definitely place the first section of the filling. Reamers in the engine should be used with the greatest care, if at all. Hand reamers are much safer. One or more radiographs of the root with a diagnostic wire in place should be made to exactly determine the length of the canal. Choose as large a root canal

plugger as will pass to the end of the canal without a suggestion of binding. Dress off the end of this plugger with cuttlefish disk in the engine so that it is flat and at right angles to shaft of plugger. Bend a shoulder on the plugger so that the shoulder will rest on a given or chosen edge of the cavity margin when the point of the plugger is at the end of the canal. This shoulder in its relation to said cavity margin indicates accurately where the plugger end is reaching in the canal and as the shoulder recedes from the margin, how much filling material has been built up.

Some High Lights of the Mouth Health Campaign Now Being Carried on in the Province of Saskatchewan

DR. HARRY THOMSON, FIELD SECRETARY, CANADIAN DENTAL HYGIENE COUNCIL.

One very outstanding feature of the Mouth Health Campaign now being carried on in Saskatchewan is the splendid co-operation and esprit de corps displayed by every member of the Dental profession. A good example of this spirit is shown by the programme carried out in the City of Saskatoon, February 20th, 21st and 22nd. There are twenty-four dentists there, and on the morning of February 20th, and the two days following, twenty-four dentists (every man in the city) was actively engaged in Campaign work. Twenty-two of them were inspecting the mouths of school children, and in three days had completed the examination of 7,300 children. A short talk on mouth health was given by each dentist in every class room. At the same time during these three days mouth health addresses were being given to all organized groups meeting during that time, such as the Rotary, Kiwanis, eclectic clubs, Women's Canadian Club, a meeting of all the City school teachers, nurses in training, and a very outstanding opportunity was afforded to address 1,500 Saskatchewan School Trustees meeting in convention there at that time. Not only did the Saskatoon men take care of their own city, but extended themselves out to include small towns and villages surrounding. In one particular case a dentist travelled 112 miles. There were only three trains a week to this place he was going so it meant three days absence from his office in order that this town might have an outside man tell the Campaign story.

The success of the Campaign here in Saskatoon was largely due to the untiring energy and organizing ability of Dr. Paul Winthrope, but the response he received from his fellow dentists, and the assistance unanimately given by them made the task a pleasant one.

Equally successful programmes were carried out in Battleford, Humboldt, Yorkton, Rosetown and Prince Albert. In the latter city a very splendid banquet and joint meeting of the three Service Clubs was held, at which meeting Dr. Seymour, Deputy Minister of the Provincial Health Department, gave an address, as well as the one given on Mouth Health. A fine atmosphere pervaded this meeting and Dentistry is very much better for just such affairs as this was. Great credit is here due to Dr. G. A. Robertson, Local Chairman, for organizing this particular meeting and the entire programme.

Here, as in Saskatoon, the dentists have given very freely of their time, and have put forth a great deal of effort in getting together material, data and in holding meetings in preparations for these talks. The result has been that fifteen dentists were prepared and have been actively engaged in telling the different groups what our Campaign stands for, and what Mouth Health really means to every individual. This Regina programme, as you see, embraces almost every activity that is being carried on this week. Several of these meetings were outstanding on the point of at-

tendance, interest and enthusiasm displayed.

Once again, here, some tribute must be paid to the Regina Chairman, Dr. C. W. Parker, for his untiring energy and organizing ability that was responsible for this very successful programme. It is not easy to estimate the amount of work involved in arranging for and carrying through a programme such as this. Dr. Parker has given a very splendid example of what one man can do when he has the co-operation of the entire body of the profession along with him and behind him.

An outstanding meeting here was the meeting of the Men's Canadian Club, at which Dr. Seymour, Deputy Minister of Public Health, represented the Department of Health. Dr. Seymour's address on this occasion was a very splendid one embracing general health features from a dental health standpoint.

Added to the programme in all of these towns was splendid newspaper publicity. We have had the hearty co-operation, with one exception, of every newspaper man in the Province so far, and a great deal of publicity has been spread in this way. The following editorial is a splendid illustration of the kind of newspaper support we are receiving:

Editorial From The North Battleford Optimist

"The violation of natural laws, in so far as health is concerned, brings with it dire and certain penalty. The highest or the lowliest creature may sin against Divine law, but if in penitence and contrition Divine forgiveness is sought, we are assured by Holy Writ that it will be given. A citizen may offend against the statutes and laws of his country but mercy can be meted with justice, and under the first offenders act, full pardon may be granted. But offences against the natural laws governing the health of body knows no for-

givenness. Health laws are inviolate—abuses and offences bring unrelenting and certain penalty.

"Because of this inexorable justice medical science is teaching preventive measures more and more. We are not now content to deal with malaria, plague, typhoid and other devastating diseases as such, but science has grappled with the conditions which create these diseases, and by removing contributing causes, many of the diseases which were devastatingly rampant, are now practically unknown, or at least very much restricted.

"One branch of natural laws in so far as they affect the public health, however, appear to have been sadly ignored. We refer to that affecting the health of the mouth, or dental hygiene. So far has our ignorance and neglect on this important subject been developed, that the inevitable penalty is demonstrated by millions of cases of bad teeth. Instead of divining the causes leading to this deplorable state of affairs, we have been content to develop the science of ameliorating dentistry. Filled teeth, false teeth, and toothless gums are evident, where if natural laws had been understood and obeyed, there would be sound teeth, healthy mouths, and a freedom from those many bodily ills directly traceable to bad teeth and foul mouths.

"Because of this fact the Canadian Dental Hygiene Council is undertaking a Saskatchewan wide campaign of education, bringing to Canadian citizens some practical information on this important subject of preventive measures, seeking sounder teeth and healthier mouths. The educational campaign is on and Dr. Harry Thomson, the field secretary, is in the province for the next two months for the purpose of giving a practical ad-

dress on the subject to local citizens. Behind this valuable and laudable work stand the health bureaux of all the provinces, the Red Cross Society and every other organization concerned with the health and well being of Canadian citizenry."

Wherever the opportunity served, broadcasting by radio has been carried out and in that way our efforts were extended for many miles surrounding our centres. Some tribute must also be paid the moving picture owners, for they have fallen right in line and in each centre they very willingly gave our reels important place on their programme. In the smaller towns they turned the theatre over to the local committee and the school children in different groups were brought there and a short address on Mouth Health given and three reels shown; a trailer which tells the story of the Saskatchewan campaign, a general health picture and a Dental Health comedy picture. This group of films makes up a very splendid, interesting and entertaining method of giving a Mouth Health programme, particularly to children whom we would not otherwise come in contact with.

The Free Travelling Clinic carried on under Red Cross and Municipal Outpost Hospitals, has been in operation now three weeks under the care of Dr. Lillis. We were very fortunate in securing Dr. Lillis for this particular part of the programme. He has proven himself a young man with a vision of what real service is, and on several occasions has extended himself more than a man in this position ordinarily would be called upon to do. A final report of the work done in this Free Travelling Clinic I am sure will be an outstanding example of the need that such work be continued un-

der some auspices, and perhaps under provincial government auspices until such time as these districts are more thickly populated. Last week, apart from prophylaxis, 154 kiddies were taken care of in six days. In every instance the needy are taken care of first. If sufficient time is available the others are treated.

Such co-operation as we are receiving here in Saskatchewan would be a surprise to many who have been doing health work in other parts of Canada. The people of this province appear to be thirsty for such information as we are giving them, and their enthusiasm is aroused so quickly that 100 per cent. of all meetings have been successful from an attendance and interest standpoint. The work is still going on throughout the southern part of the Province, and it is expected to finish the last week in March, following which complete reports of all details of the campaign will be published as early as they can be compiled.

In conclusion let me say that the Saskatchewan Mouth Health Campaign is going over big. The dentists have done more than their own share. The Provincial Departments of Health and Education, and the Provincial Red Cross, have done more than co-operate—they have given us leadership, in many cases, and I am sure that the satisfaction felt from a job well done will result to all of these organizations and individuals when the final reports are published.

We regret that an error crept into the columns of the "Dominion Dental Journal" March issue, which stated that Dr. B. A. Reeves of Toronto, had recently died. But as there is only one B. A. Reeves in Ontario there is obviously an error for which we apologize.

Joint Convention of the Canadian and Ontario Associations

KING EDWARD HOTEL—TORONTO

June 4, 5, 6, 7, 1928.

MONDAY, JUNE 4th.

9.00 A.M.—Registration.

1.30 P.M.—Address of welcome.

Mr. Sam McBride, Mayor of Toronto.
Announcements.

President's Address:

Dr. A. E. Webster.

Memorial.

Diet and Dental Disease: Dr. Sherman, Davis, Indianapolis.

Developmental Defects and Caries:
Dr. Thaddeus P. Hyatt, New York.

5.30 P.M. June Garden Party: Donalda Farm.

(Complimentary)

Arranged through the kindness and courtesy of Mrs. D. A. Dunlap. An opportunity to see one of the world's most wonderful farms—beautiful flower gardens—prize stock. Supper—Aquatic Sports—Games—Entertainment.

TUESDAY, JUNE 5th.

9.00 A.M. Clinics:

Radiodontia: Dr. Howard R. Raper, New Mexico.

Periodontia: Dr. Justin D. Towner, Memphis, Tenn.

Partial Dentures: Dr. Edward Kennedy, New York.

Full Dentures: Dr. R. O. Schlosser, Chicago.

Treatment of Developmental Defects in children's teeth: Dr. Thaddeus P. Hyatt, New York.

Local Anaesthesia, Simplified: Dr. W. B. T. Amy, Toronto.

Various Types of Abutments for Vital Teeth—

Method of expanding wax pattern and investing to compensate for shrinkage of Gold: Dr. O. S. Clappison, Toronto.

Orthodontia and the General Practitioner: Dr. S. A. Moore, London.

Dental Diagnosis for Children: Dr. A. D. A. Mason.

(a) A complete Mouth Examination:

(b) Economics:

Dr. R. G. McLean, Toronto.

Taking an Impression: Dr. J. A. Bothwell, Toronto.

Porcelain in Operative Dentistry:
Dr. J. N. Stewart, Hamilton.

Dental Diagnosis for Children: Dr. A. D. A. Mason, Toronto.

Porcelain in Prosthetic Dentistry:
Dr. A. A. Stewart, Toronto.

12.15 P.M. Class Re-Union Dinner:
Crystal Ball Room.

Prominent Speaker—Community Singing—Entertainment.

2.00 P.M. Meeting: Canadian Dental Association.

Clinics:

Full Dentures: Dr. R. O. Schlosser, Chicago.

Partial Dentures: Dr. Edward Kennedy, New York.

6.30 P.M. Dinner Dance: Crystal Ball Room.

Dinner—Delightful Diversion—Dancing.

WEDNESDAY, JUNE 6th.

9.00 A.M. Clinics: Same as Tuesday.

12.15 P.M. Round Table Conference:
Subjects to be discussed will be published and members are requested to indicate in advance the table at which they would like to have a place.

2.00 P.M. Meeting: Canadian Dental Association.

Election of Officers: Ontario Dental Association.

Clinic: Preventive Dentistry: Dr. R. W. Bunting, Ann Arbor, Mich.

6.00 P.M. Fraternity Dinners.

Class Re-Unions.

Theatre Parties.

Dental Alumni.

THURSDAY, JUNE 7th.

9.00 A.M. Individual Table Clinics:

Clinicians: Dr. I. H. Ante, Toronto;

Dr. R. H. Atkey, St. Catharines;

Dr. A. B. Babcock, Toronto; Dr.

H. G. Bean, Toronto; Dr. G. F.

Beldon, Toronto; Dr. J. A. Both-

well, Toronto; Dr. C. E. Brooks,

Toronto; Dr. C. G. Chapin, To-

ronto; Dr. F. L. Cole, Toronto;

Dr. D. C. W. Coupland, Ottawa;

Dr. J. D. Craig, Peterborough;

Dr. W. A. Crich, Toronto; Dr. H.

H. Cummer, Toronto; Dr. W. E.

Cummer, Toronto; Dr. T. W. Daw-

son, Toronto; Dr. J. C. Devitt,

Bowmanville; Dr. J. H. Duff, To-

ronto; Dr. G. V. Fisk, Toronto;

Dr. E. A. Grant, Toronto; Dr. E. T. Guest, Toronto; Dr. G. C. Gunton, Toronto; Dr. J. W. Hagey, Kitchener; Dr. F. C. Husband, Toronto; Dr. L. D. Kay, Kirkland Lake; Dr. W. J. Kerr, Toronto; Dr. Marg't. Kinsman, Sarnia; Dr. J. S. Lapp, Toronto; Dr. W. J. Laker, Toronto; Dr. A. J. McDonagh, Toronto; Dr. J. A. McDonagh, Toronto; Dr. L. A. McLachlan, Ottawa; Dr. C. E. Pearson, Toronto; Dr. W. K. Pendergast, Toronto; Dr. F. D. Price, Toronto; Dr. J. E. Rhind, Toronto; Dr. H. G. Robb, Toronto; Dr. W. L. Spaulding, Toronto; Dr. A. S. Thomson, Toronto; Dr. A. E. Webster, Toronto.

The London Dental Association will give a special clinic on Amalgam.

THURSDAY, JUNE 7th.

12.15 P.M. Annual Meeting: Canadian Dental Hygiene Council.

1.30 P.M. Annual Golf Tournament. Canadian and Ontario Dental Associations.

Cups.

8.00 P.M. Convocation. University of Toronto.

* * *

Registration Fee for all dentists in Canada—\$10.00.

Dentists from United States will be welcomed as guests.

Members of the profession from outside of Ontario will be expected to pay the Ten Dollars Fee and this money will be forwarded to the Secretary of the Canadian Dental Association.

Further information may be secured by communicating with Dr. Fred J. Conboy, Secretary Treasurer, Ontario Dental Association, East Block, Parliament Bldgs., Toronto 5, Ont.

Samuel G. Supplee to Visit Montreal

The Montreal Study Club of Dental Technicians of Montreal announce an event of unusual importance for their second anniversary meeting on April 26th, 1928.

They will have as their guest Mr. Samuel G. Supplee of New York to address them. Mr. Supplee is one of the outstanding Dental Technicians in the United States—a dental laboratory owner for many years and a recognized authority on impression taking and full Denture technic.

The Club is fortunate in being able to have Mr. Supplee at this date. His large business and his many lecture engagements had him booked up for several months.

At 2.30 in the afternoon of April 26th he will address the dentists in the Convention Hall of the Mount Royal Hotel. His subject will be Practical Suggestions in Impression Taking for full and partial Dentures. A cordial invitation is extended to all dentists to attend.

At 7.30 he will be the guest of honor

at the banquet of the Study Club of Dental Technicians. His address to the Technicians will be one of a more intimate standpoint regarding Laboratory technic and practice.

(Signed),

RUSSELL COPEMAN,
President.

The Edmonton Dental Society resumed its monthly meetings by holding an evening lecture in the McDonald Hotel, Oct. 14. The speaker Dr. Morton Hall, Pathologist at the Royal Alexander Hospital, had just recently returned from a Post Graduate Course in Vienna and gave an outline of the latest research work in inflammation as carried out by thinkers in European clinics. The message was well received and Dr. Hall was given a vote of appreciation.

New officers of Edmonton Dental Society: Dr. Robert Decker, Pres., Dr. Alex. Gemeroy, Vice-Pres., Dr. W. S. Hamilton, Sec'y.

Classmates of 2T3

Well, what do you think of the booklet containing the "Nominal roll of the Class of 2T3"? We hope it is a whizzbang enough to blow you out of your old dug-out and start to feel a sort of hankering after that old Class Spirit and Fellowship of 2T3. Then when you begin to feel rather reminiscent, just turn over to some of your old pals on the "Nominal Roll", and drop them a line to tell them—When the roll is called in Toronto, you'll be there! You can do a lot to make this reunion in June a real success, if you just do a little propaganda stuff, independent of the harassing fire from Headquarters.

We heard from Gordon Gropp, Columbus, Ohio, this week, and he says the "Nominal Roll" is a snappy idea, and assures us that he is all set for the Reunion. Shorty Towner also writes in to say the boys from Detroit will be out in full force. Purcell from Pembroke, drops us a cheery line—Jimmy Mandeville is coming too. Dick McDougall from Moose Jaw, Saskatchewan, is doing good work in the west and although it is a long trip for some of the boys, we figure that this whizzbang reunion is something to look forward to. In fact, letters of regret will only be in order from those who are practicing in Timbuctoo, the Fiji Islands and Siam.

We have a programme committee functioning in Toronto, and they are planning to put on the smartest and snappiest Class Reunion Programme, so that you will feel that it is not just a one-day banquet affair, but something a little unusual.

If you have any suggestions, send them along as soon as possible for committee to work on.

Don't forget to mark off your appointment book — from June

Fourth to Seventh, and write across it "Ontario Dental Convention and 2T3 Reunion."

We still have a few copies of the "Nominal Roll", and if you didn't get yours, just let us know and we will send you another.

R. E. BRAYLEY, Sec.-Treas.,
86 Bloor St. West, Toronto.

The Dental Nurses' Alumnae are holding their Annual Convention, June 4-5-6 in the King Edward Hotel.

A very interesting and instructive programme is being prepared by the committee and a cordial invitation is extended to all Graduate Dental Nurses and assistants to be present and help make it bigger and better than ever.

Any further information will be gladly given by Miss Whitehead, Convention Convenor, Trinity 9808 or Hudson 3968J.

WILDA M. LEASK,
Plul. Convenor.

Dear Doctor:

The April meeting of this society has been postponed until April 30 and May 1, when we are to have Dr. Switzer, of the Faculty of Dentistry, University of Toronto, who will give a two-day Clinic on Full Upper and Lower Dentures. He will carry a practical case to completion, if we desire, and at our last meeting it was decided to have him do so, rather than be content with table clinics.

This Clinic will cost us very little, as Dr. Switzer's expenses are being paid out of a fund provided by the University of Toronto. We have only the local expenses to meet.

W. SCOTT HAMILTON,
Secretary-Treasurer.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

ASSOCIATE EDITORS:

QUEBEC—Eudore Debeau, L.D.S., D.D.S., Montreal; A. W. Thornton, D.D.S., L.D.S., Montreal.

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NEW BRUNSWICK—Jas. M. Magee, L.D.S., D.D.S., St. John.

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ONTARIO—S. Stewart Crouch, D.D.S., Toronto; W. C. McCartney, D.D.S., L.D.S., Ottawa.

Vol. XL

TORONTO, APRIL, 1928

No. 4

No doubt your many readers will want to know what success has attended the Oral Health Campaign which was concluded here last Saturday night. For this purpose just a few lines.

The success of such a campaign depends entirely upon how much public interest has been aroused. If we have not succeeded in getting the attention of the public then the campaign would be a failure no matter how much money or how great an effort had been spent upon it.

Never in the history of Saskatchewan has the mind of the people been concentrated upon any subject as it has been in this case. Oral Hygiene is now understood by old and young as it never was before. The mass of essays which has come in from school children, old and young, clearly proves the truth of what I say. And the excellence of these essays shows how splendidly the lesson has been learned. It would be difficult to get a better result than we have had and anyone who would want better is very hard to please. Thousands have listened to the addresses and in not a single case has failure attended these gatherings.

How does it come that the people so readily responded to the call to listen to a talk on health? Well, the answer proves the value of laying a foundation and laying it well. In the first place Dr. Harry Thomson came to Saskatchewan several years ago. While here, with some difficulty, a place was obtained for him to speak at the School Trustee Convention then in session at Regina. About two thousand trustees were in attendance. After Dr. Thomson was through there was a regular stream of delegates back to the rear of the hall begging him to come to their town and make the same address. Then it was that Dr. Thomson laid the foundation. This year he was timed to

come when this same convention again assembled. As soon as this was decided upon the Chairman of the original Trustee Convention was called upon and asked if he could recommend Dr. Thomson for an address. This was J. F. Bryant, of Regina. At once he got busy and supplemented the action of the local committee. The result was that Dr. Thomson was given all the time he wanted. Now this Trustee Association covers the whole Province. Dr. Thomson again captivated the assembly, the result being that trustees went back to their several thousands of school districts all prepared to receive Dr. Thomson or in fact anybody who represented Dr. Thomson and to speak on the subject of Oral Health. Thus was laid the foundation. About four years were required to lay it, but the result has been marvelous.

Then to this the Health Department of the Provincial Government threw in its full strength. They added the Educational Department and these used the entire school system of the Province to enable the Hygiene Council to carry on its campaign. The Red Cross willingly gave every help they could. To this of course the various Dental Societies added their weight and I think Dr. Thomson will concur when I say that they acted their part fully. I leave that to him.

It will at once be seen that a very formidable organization had been created to carry on this campaign, that in creating this organization a most effective means had been taken to reach the people. Through the schools publicity was carried and that in an incredibly short space of time to every corner of this enormous Province.

Dr. Thomson, it is needless to say, in his addresses reached right home. Hundreds and hundreds to our knowledge have said that they never heard a better speaker. But the other dentists rallied splendidly to the task of addressing all kinds of assemblies. And I have yet to hear of a single case where the audience was restless. For my own part I can say that I have never addressed audiences which gave better attention to what I was saying than I addressed on this occasion. All of which goes to show that Oral Health is not such a desperately dry subject after all.

The rural communities are begging to have still further information on the subject, thus showing that a real permanent interest has been created. This is the real objective. It has been attained. If this interest can be repeated elsewhere or continued here the human family will be immensely benefited. We will try and continue it and I think the Saskatchewan dentists are equal to the task of continuing what has so well been begun.

We dentists of Saskatchewan are very thankful to the Oral Hygiene Council for the assistance they have been and for sending Dr. Harry Thomson out here to organize this campaign. Dr. Thomson is a real organizer and a splendid speaker.

On Saturday evening last the campaign was brought to a formal close by a banquet held in the Saskatchewan Hotel, Regina. To this banquet had been invited Dr. Uhrich, Minister of Health, the Minister of Education, the Manager of the Red Cross. The Minister of Health was there in person. His Deputy, Dr. Middleton, was also present, as was Dr. Seymour, who is now Advisor to the Health Dept., he having been recently appointed to that position after twenty-two years as Deputy. Deputy Minister Ball represented the Minister of Educa-

tion. Also Miss Ruby Simpson. She was particularly singled out for thanks because of the splendid work she did in organizing for the Educational Department.

Many of the leading dentists from all over the Province were present. Practically every section of the Province was represented on the toast list. Not a single one but what expressed entire satisfaction at the manner in which the campaign had been carried on and the results which were so evident.

The Minister of Health spoke at length and it is very evident he is as pleased as the dentists themselves at the result, Dr. Seymour had accompanied Dr. Thomson to a number of points. He was very enthusiastic and in the address he gave he did not hesitate to say that he was going to advise the Minister to adopt a very aggressive policy on Oral Hygiene. And I am inclined to the opinion that he will find Dr. Uhrich prepared to go a long way, as he seems determined to do all he can to place Saskatchewan right in the front rank on all health measures. Needless to say that the Government was thanked for their assistance as was also the Red Cross and the Oral Health Council. All agreed that Dr. Harry Thomson had met every circumstance of the campaign in a most masterly manner.

Yours respectfully,

W. D. COWAN.

CORRESPONDENCE

Another Viewpoint on Focal Infection

Skidegate, B.C., March 14, 1928.

Dr. A. E. Webster,

Honorary Dean, Royal College of
Dental Surgeons,
Toronto, Ont.

My Dear Webster:

I have been reading your article in the February number of "The Dominion Dental Journal" on Focal Infection, also other writers' theories on this subject.

It is deplorable that our modern naturalists deny many facts which simply rest with experience and observation, for the corruption of blood and lymph, merely because they do not fit into the dead doctrines of an antiquated system.

One of these facts, for instance, is that the mental and bodily welfare

of man depends to some extent on the imponderable influences of the atmosphere. Neither heat nor cold, neither humidity nor dryness, nor their sudden changes, but an unexplainable peculiarity of electric condition of the air, is the principal cause of sudden epidemics among men, animals and plants.

The circumstance that we do not yet know the real nature of the relation of the different electrical atmospheric conditions to the living beings cannot speak against this theory. That the influences exist is proven by many facts: the pains which many feel from time to time in formerly broken limbs; the well-known critical days (the seventh, fourteenth and the twenty-first day) in fevers

corresponds with the days of the changing moon. Many so-called nervous diseases and other more or less pathological conditions, show a periodical return, etc.; dogs become morose and lazy if it is going to snow; the cattle become restless, the fish do not bite, etc.

These examples, taken from a large number of facts, prove this atmospheric influence which may often be overlooked on account of its still obscure sphere of activity; they could also show some would-be investigators the direction in which they ought to work to attain real results and a far-reaching view; then these gentlemen would recognize that the chase after microbes is a mere bauble, riding a hobby-horse, and a loss of time; for in the air we breathe, in the water we drink, in the food we eat—be it prepared ever so carefully—we swallow millions of bacilli every day, and we cannot exclude them from our system by any conceivable means.

The attitude of the Allopathic school in regard to the germ question is most cleverly ridiculed by the following humorous verses which will speak for themselves.

"He always boiled the water,

As the health department begs;

He pasteurized his coffee

And his matutinal eggs.

He filtered this and filtered that

And sterilized the rest,—

Did everything the Board of Health

Thinks in its wisdom best;

But he couldn't boil the atmosphere

Four-fifths of which is germs,

So death negotiated him

Upon some easy terms.

P. F. SIZE.

Economy is doing without the things we need so we can buy the things we think we need.

REASONS FOR NOT ATTENDING THE DENTAL CONVENTION

Dear Editor:

The editor of the "Booster" seems to be devoting considerable space this year in an endeavour to get Ontario dentists to part with their ten dollars and join the Ontario Dental Association. The tone of his appeals would suggest that the dentists are slow to send in the money.

Ever since graduation I have tried to answer the following questions with regard to my profession:

Why are so few dentists interested in professional activities and societies, and why do so few join the Ontario Dental Association, and why do so few bother to vote when there is a district election?

Why do so few seem to be interested in improving their efficiency both in the type of work or surgery they do, and in the plan, system, efficiency and execution of their office routine?

Why is it that new ideas take years to become known even among the educated classes of patients, and that specialists are the only ones able to persuade the people to pay for a high grade of service?

The dentist in general practice today needs a lot of expensive equipment if he is to render a real service. By the time he adds a gas and X-ray machine to the regular equipment he has a pretty fair amount invested, and he can practically figure all his equipment will be worth nothing if he wants to sell it in ten or fifteen years' time, due to depreciation and changes in design, etc.

In order to give such a service he must be in with another dentist or have a large, constant flow of patients who are able and willing to pay for the class of service he renders. If his practice will not warrant the extra capital expenditure how can he get the equipment to render the service? and make it pay after he ties his money up in it?

Then he must remember that he has had an expensive education. That he could have become a lawyer or a physician for the same money. He is tied down to give service to the public, and cannot control very well as to who he will work for, unless he is in a city, or is a specialist.

He is doing surgery in the mouth, whether it be drilling a cavity or scaling teeth or extraction, and must take some responsibility not only for ill-results, but for the danger of injury, to the patient or to his own hands through accident or infection, and ultimately to his own health on account of being indoors and breathing large quantities of infected air exhaled by patients. If he carries insurance to protect himself in every way the cost is considerable. At any event the risk is there and someone must bear the consequences.

The attitude of the public is such that the dentist must often do what is requested rather than what is advised. Why then shall I go to conventions and societies and improve myself when on my return the patients will not pay me for the extra expense, trouble or skill required for the new work?

Not only that, but they will leave me because Dr. X will make an inlay for 50c less, but he will not tell them he uses a poorer grade of gold.

If I want \$50 for two dentures some other dentist will guarantee them and make them for less. I have had patients leave me to get free extraction and a denture for \$12, though they had to travel by train to get that price. The dentist told them he was using the best teeth. If you asked him why he was doing this he would tell you to mind your own business. The result is the patient thinks I am crooked, and I can say little that will convince him, so have to let him go if that is the class of denture he wants.

A dentist friend of mine tells me he gives gas for a dollar, I am

obliged to do extractions for \$1 or less, amalgam fillings for \$1, and partial dentures for six dollars plus a dollar a tooth. How can I render the service I should at these fees, and if I raise them people will go elsewhere for cheaper work, or they will say, "Well I would pay a little more provided I knew I was getting something extra," and they go elsewhere to save a dollar.

It is no trouble to get dentists to guarantee work and to do it for less than other dentists. I have lost many patients by refusal to guarantee, or to beat fees quoted elsewhere, and what thanks do I get for my ethics?

People hold dentists in the same class as tinkers, instead of surgeons. They refuse to pay for time and material used in making dentures and especially for remakes, regardless of the low fees they may have demanded, especially if they are hard to please. They even ask for free trials on dentures. If a physician operates for an appendix and the patient dies he gets his fee, but the dentist is required and expected to guarantee his root-canal surgery, and his pyorrhea treatments, and if the patient is not satisfied he is expected to do the work for nothing. They nearly all expect the extraction fee to apply on the denture fee, and the extraction is thus done free. This is where it pays to send them to a specialist, but in the smaller places who will care to specialize? I have offered to send another dentist patients for certain work if he will return them to me for the other service, but he will not do it.

People will come to me and spend a half hour in consultation and expect to pay nothing for the advice, while they will willingly pay their lawyer or physician for their time and advice. If they decide to go to another dentist for the work I find it

(Continued on Page 140)

Dr. Whang's Sojourn in Canada

At the request of the Committee in charge of the Whang Scholarship Fund, I will state as briefly as possible a few of the anticipated advantages of Dr. Whang's sojourn in Canada.

The graduate and postgraduate studies made possible to Dr. Whang through this fund should more adequately qualify him to fill a large and influential position in the future dental programme of West China, where, at present, modern dentistry is in the process of development. When I use the term 'modern' I do not suggest it in comparison with the last ten or even twenty years of advancement here in America, but in contrast to the crude, empirical methods used for hundreds of years in the Orient—that is, of inadequate iron tools in the hands of the quack, of his worm-removing operations, of his mysterious concocted plasters, and his necromancy.

Dr. Whang, before coming to Canada, acted on the Faculty of Dentistry of the West China Union University. He will again serve in that capacity on his return. His newly acquired qualifications will fit him to occupy a much more important position, this both from the standpoint of the Faculty and of the students. In a land where the man of education takes the highest rank, he who has been abroad to study has a peculiar wide-reaching influence and respect. If he walks wisely he walks well indeed.

He should also be able to make an important contribution to the work of communicating to the Chinese public the place which Dental Health Service should occupy in the life of the individual and of the community. Dr. Whang's new outlook on modern dental science, art, and education combined with his familiarity with Chinese language, customs and culture



Dr. T. W. Whang, D.D.S., of West China Union University, Chentu Ching, Szechwan.

should place him in an increasingly valuable position for this service. Up to the present this department has been under the supervision of the Westerner. He worked through the medium of teachers who did not understand English or the language of dentistry. Twenty years ago a town man travelling along a country road carried a fan, an umbrella, a face cloth. To this is now added a toothbrush. At first it was a large clumsy affair of Japanese importation. Now one more frequently sees the more slender type which has been manufactured by our own dental hospital, —or a clever copy of it! But it still swings from the rib of his umbrella as he tramps along the dusty path. There is so much yet to be done. There are sixty million of a prospective clientele in that one province! A splendid opportunity for an Oriental to serve his people as no Occidental ever can.

Upon Your Decisions, Doctor

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constantly

THE dental profession dictates the Pepsodent formula of today—not we as manufacturers.

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Please send me, free of charge, one regular 50-cent size tube of Pepsodent, with literature and formula.

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2862 Can.

As the West China Union University is the only university providing college grade education in Dentistry in the whole of the Chinese Republic one can estimate somewhat the tremendous opportunity for the graduate to influence public opinion, thereby creating a demand for other training centres in a country so rapidly awakening to its varied needs.

Let me add one more word, if I may. To us who are working to bring the larger Christian concept of nation brotherhood and world-wide fellowship out there, it has been a rare privilege to have one of our graduates come here to learn that you support our teaching and drink from the same source the ideals which have compelled us to serve in China.

These briefly are a few of the larger areas in which Dr. Whang's influence may be felt. Dental History is being slowly written in the East. We five Canadian dentists, Ashley W. Lindsay, J. E. Thompson, H. J. Mullett, R. M. Anderson, R. G. Agnew, on the Faculty of the West China Union University, are proud of the fact that Dr. Whang, also, is now a graduate of our alma mater. For this writing of a new page in our dental annals we have to thank you men of Ontario who have made it possible.

Letters to the Editor

Am writing to ask what treatment you prescribe at the college for acute gingivitis.

I have a case just now very acute and painful to my patient (man about 30 years old), and I'd like to clear it up quickly, if possible.

Am using astringosol (pure) around pockets, but it is not clearing as quickly as I would like it. Thanking you in advance, I remain,

Dear Doctor:

The treatment used for acute gingivitis, or often called trench mouth, in the college, is as follows:

Dry portion of teeth and apply Churchill's iodine, working well down around gingiva, then a 25 per cent. solution of silver nitrate is applied immediately to the surface of teeth.

All the teeth are treated in a like manner and patient requested to return second day for another treatment, not necessarily silver nitrate and iodine. Any mechanical irritants are removed. The treatments are continued till the symptoms disappear.

Home treatment: A mouth wash, one teaspoon sodium perborate to three-quarters of a glass of water every two to three hours.

Also warn the patient of the contagious nature of the disease. Have patient refrain from brushing teeth and if a smoker decrease or stop smoking.

Some of the dentists have had very good results from having patient suck potassium chlorate tablets.

Hoping you have good results from the above treatment.

Yours truly,

Dear Dr. Webster:

I made an upper denture recently for a man between forty-five and fifty years of age. I feel it was a good fit, in fact, considerably better than the average; it required quite an effort to dislodge it.

A few days later he came in and told me that when the denture was in place say half an hour or more it would become filled with saliva and be very easily dislodged.

I made another denture for him with the same results. There does not seem to be anything unusual about his mouth.

Could you tell me what the cause of this condition would be and what I could do to remedy it?



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REASONS FOR NOT ATTENDING

(Continued from Page 137)

impossible and unwise to attempt to collect any fee for the consultation.

I know of three physicians in a town of 8,000 people that did about \$50,000 business last year and collected about \$45,000. In the same town is a dentist that used to do about \$5,000 five years ago. Last year he did not do \$3,000. I believe he does the best denture work in the town, and no one can approach his gold denture and partial work. He graduated since 1920. There are other dentists in the same town who are doing no better. In the same town are dentists that spend long hours in the office. I do not know how they can work for nine or ten hours a day and do things right. I do not know of any surgeon who would attempt such a pace. Such men are charging low fees, and are generally too busy to bother with collections. How can a dentist who does his own denture laboratory work compete with men like this who send their work to a laboratory or can hire a man of their own? He must do the work at a loss or else charge higher fees for the finished service, if he must do his own laboratory work.

Some dentists hate collecting accounts. I hate to work for any person for nothing, and yet when lawyers, courts, and agencies fail what can a dentist do? The town school teachers, police, lawyers and others are all paid and yet dentists are encouraged to man public clinics and do dental surveys free. Why?

Asking for a deposit will drive quite a number away that many dentists feel they cannot afford to lose, and so many slow pays are acquired.

I do not know why the Ontario Dental Association does not get busy on this kind of thing. I hardly feel like going to a convention to learn some new ideas when on my return those new ideas will be taken up by the patients very slowly, and other

dentists will very likely discredit what I say to my patients. Often the new ideas are very costly in execution and would be rarely used, and the patient would be better satisfied with a cheaper service.

Sometimes I think that the day may come when every dentist will be required to furnish proof every five years that he has (a) attended two dental conventions, or (b) taken a month's course at some approved college. In case he does not do either that his license be suspended till he takes such course or attends such conventions. It is most unfair that some men be allowed to practice without any effort to keep up to date, especially now that dentistry is becoming so long a course and so responsible a profession.

The dentist that reports these conditions is considered a grouch. The busy man has no time to think about these matters, and they all realize that they are helpless as individuals to improve conditions. There is no use unless every last dentist will do his part. In addition the public must be told that dental service is worth just about what they pay for it, and if they are getting something very cheap there is a reason.

As soon as the public will be alive to and demand real dental service, I will go to conventions and take courses, but as things are I would rather spend my money on a holiday in Muskoka.

If the Ontario Dental Association will face the facts and make some effort to educate the farmers and town people of this province I am sure they will get over a thousand dentists to join up.

Yours truly,

HAROLD D. MORRIS.

The Halifax Dental Society has decided to open and maintain a dental clinic for the poor in connection with the Public Health Clinic.

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Thanking you in advance, I remain, very sincerely yours,
Dear Dr.

In reply to yours of the 20th I would suggest the following, which I think might have influenced your result:

(1) That the denture might extend too far on the soft palate or riding at some point in that region.

(2) That the periphery of the denture is too high, allowing muscular action to dislodge same.

(3) That the post-damming in the region of the parotid duct be checked and that the position of the duct be noted.

(4) That the rubber in the denture be changed to jet black (the color in other rubber having caused irritation).

(5) That there may be a systemic factor influencing saliva flow. Also check its viscosity.

(6) That the occlusion may dislodge denture. Check by grinding.

Yours very truly,

Dear Dr. Webster:

I wonder if you could advise me with reference to enclosed radio of left lower cuspid. Patient has already been to several dentists, but the condition does not clear up; this condition has been going on now for three years. The tooth is vital, and a swelling develops on the lingual of the tooth between the gingival and apex of the tooth every three months regular. I have done a great deal of scaling, etc., grinding of occlusion, but no

results. I would appreciate it if you could suggest any treatment that might clear this up.

(Editor) Such cases are not at all common, and yet they occur often enough to keep one on guard. Judging from the history and the X-ray pictures one is inclined to think of a pericemental abscess, or sometimes called a lateral abscess. They have no direct connection with either apical or gingival infections, but may have had such a connection at one time. They are often the result of local trauma and some primary focus of infection perhaps quite remote.

The treatment is to enter the infected area from its level on the gum, curette the cavity and pack with gauze or better, with gutta percha, allowing the area to fill in from the bottom.

Dr. A. C. Webster, Toronto, Ont.

Jan. 21, 1928.

The Sydney Post, N.S., is all worked up about the N. S. courts allowing a convicted bandit being set free after having several foci of infection removed. It was claimed by the surgeons and alienist that the criminal tendencies exhibited will all pass away, and that he will become a normal citizen. The Post calls it legal ingenuity and medical jurisprudence obstructing the course of justice.

The forty-seventh annual meeting of the American Dental Society of Europe will be held on July 30th, July 31st and August 1st, at the Palace Hotel, Brussels, Belgium.

FOR SALE—Dental Practice in Calgary; modern equipment; central location; inventory on request. Apply Ash-Temple Co., Calgary.

FOR SALE—Very reasonable, a Bosworth Operating Room Lamp, in excellent condition. These are selling at \$65, will sell for \$25. Apply, Dr. A. N. Hill, Dundas, Ont.

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Dominion Dental Journal

Vol. XL

TORONTO, MAY, 1928

No. 5

ORIGINAL COMMUNICATIONS

Exodontia and After Pain

C. W. COUPLAND, D.D.S.

Read before the Ottawa Dental Society.

The science of extraction of teeth has advanced to a system of removal based on sound surgical principles which places this operation in its just place in surgery.

It is a recognized fact that the extraction of a number of infected teeth at one time with a general anaesthetic, is an operation of considerable consequence, and the removal of impacted third molars is a major operation.

It will be the purpose of this paper to deal briefly with certain problems in extraction, including:

Choice of anaesthetic, diagnosis, asepsis, extraction of simple and difficult teeth, post operative pain, after treatment and dry socket.

Choice of Anaesthetic

The anaesthetic factor is one that is settled by the individual operator, who, after careful examination of the area to be operated on, and with the knowledge of the patient's general condition decides.

Operations requiring time and finesse of technique can be performed

with greater ease under local anaesthesia. This includes the removal of small root ends, exostosed roots, buried roots and operation of this type.

When doing extensive work on patients suffering from systemic disease and on cases where the physician feels that there is an element of risk attached—it is a wise procedure to perform the simplest extraction, using a dilute local anaesthetic, waiting for a number of days and noting any reaction. Following this, the work is done, extracting not more than three teeth at one time, the length of time between the operations, depending on the reaction of the patient.

Many will not agree with this procedure, but experience has proven that it is the safest.

Many patients should not have a general anaesthetic administered except in acute infections or save other special reasons. Among these are:

Alcoholics, drug addicts, athletes, patients suffering from diabetes, ophthalmic goitre, arteriosclerosis,

high blood pressure and endocarditis.

No local anaesthetic should ever be used in an acute infection.

General anaesthesia, especially Nitrous Oxide and Oxygen has a large field of usefulness in the extraction of teeth. All acute conditions, children, and a great percentage of routine extractions can be handled in a satisfactory manner with this anaesthetic.

Many patients report for extraction of teeth with a definite idea of the anaesthetic that they want. Most of these cases can be handled successfully with either local or general, and wherever possible the patient's wishes should be considered.

Diagnosis

Visual inspection of the patient and the field of operation should be the first procedure, a few words before an operation will often give valuable information and a general idea of the patient's general condition.

There will be no attempt to advocate which teeth shall be extracted, but it is taken for granted that this has been decided on mainly through the general health of the patient and the condition of the periodontal membrane.

Our greatest aid in extraction is a good X-Ray picture of the tooth. This saves the dentist bumping his head against something that appears to be a normal case. The length of the roots and the width of the mandible (if it be a lower) will be shown, any abnormality of formation of roots, exostosis of roots, osteosclerosis surrounding the area or rarefied area, will be indicated. The position of the mandibular canal, mental foramen or antrum, will be shown and often the X-Ray will help in many other ways.

Pressure by means of the index finger of one hand and the thumb of the opposite hand will give valuable information. If absolutely no

movement occurs when gradual pressure is applied toward buccal and then towards lingual, the tooth can be safely viewed with suspicion.

Firm teeth standing alone are often very difficult, they may become ankylosed or the roots may become exostosed. Teeth that show marked alveolar recession, but are firm in the mouth are often very brittle.

The very loose teeth should be viewed with suspicion. It may indicate a fractured root or a loss of bone around the tooth.

A few minutes in careful examination, may save many minutes in the operation and much embarrassment to the dentist.

Asepsis

The brilliant attainments of modern surgery are, in the largest measure, dependent upon the laws of asepsis. The extraction of teeth is a surgical operation and all efforts should be directed to secure and maintain surgical cleanliness. It is recognized, that the rigid measures for the maintenance of asepsis in a well conducted hospital operating-room, cannot be entirely carried out in office practice. One also realizes that the operating-room routine of an exodontist is not an ideal solution for the man in general practice, but, with careful study, the system can be devised and adopted, which will be simple and yet adequate to meet all requirements.

Certain points of interest in sterilization will be mentioned:—

Steel instruments are boiled for fifteen minutes. Before boiling sharp instruments, the cutting edge should be wrapped in absorbent. Steel instruments should be put in boiling water, not in cold water and brought to a boil. Sodium bicarbonate, should be added to the water to prevent rusting of instruments.

Glass syringes should be placed in cold water and brought to a boil, and boiled for five minutes.

The water for these should not contain Sodium Bicarbonate as this attacks the glass.

The Autoclave is the best solution for the sterilization of gauze packs, swabs, sponges, towels, etc. Hospital gauze is cut into different shapes and folded, a certain number wrapped in unbleached muslin, sterilized, and placed in an air-tight cabinet until needed. Small compresses 3" x 2" and six ply in thickness, are very useful, throat packs, 12" x 4" and four ply in thickness with a twelve inch tape attached are used for the Nitrous Oxide cases. Smaller sponges are made by cutting cotton rolls diagonally. Towels are wrapped twelve to the package, sterilized and placed in a cabinet.

Sterilizing solutions have long been a problem to the dentist, those solutions that rapidly sterilize either rust steel instruments or have other disadvantages. After a long series of elimination, Parke David Germicidal solution 1:5000 was decided on and has been used for the last three years.

The large-sized Sorenson electric suction has been used in office routine for a number of years and is a source of great comfort and convenience giving clear vision and a comparatively bloodless field even in general anaesthesia.

The Extraction of Teeth

Every text-book on the subject deals with surgical anatomy, instruments, position of the patient and operator, extraction technique of upper and lower teeth and so we need not take up very much time with these phases.

Every operator should possess a thorough knowledge of the anatomy of the teeth and surrounding parts, and through time, selecting his instruments by a process of elimination and addition, he adopts a position of operation that seems to suit him and applies the principles of extraction

movements suited to the different teeth as he has been taught.

When the forcep is applied to a tooth, an attempt should be made to make the tooth a part of the forceps. The beaks must be applied parallel with the long axis of the tooth and the root should be grasped as high up as possible, thus reducing the distance between the apex and the point of application and therefore reducing the leverage.

With a gentle lateral movement and pushing force, the beaks are gradually insinuated beneath the gum margin and over the root, until the portion to be grasped is reached. A gentle pushing force is maintained even after the tooth has been firmly grasped, so that the pressure is transmitted through the entire length of the tooth, as though trying to force the tooth through the socket. This force prevents the lingual root from slipping toward the crown and fracturing the tooth, and loosens the attachment between the tooth and alveolus. A labial or lingual movement and in some case, rotary movement is now gently used until the tooth is extracted.

During the extraction of a lower molar, a portion of one root often breaks, this as a rule, can be quickly removed, using a right angle elevator in the socket of the extracted tooth, the septum is removed and the root elevated.

If the crown of a molar fractured at the gingival margin, usually a wedge-shaped elevator can be inserted at the bifurcation, this will separate the roots, often removing one at the same time. The technique for extraction of one molar root can then be carried out.

Where the molar crown fractures and no bifurcation exists, a wedge-shaped elevator can be inserted on the buccal, and forced downwards. It may be necessary to remove a slight ledge of bone on the buccal in order to use a buccal application.

Pulpless upper teeth will often break, leaving the apical third of a root. An application of a small rounded sharp elevator between the root and the lingual wall and a combination of lateral and rotary motion will often dislodge the apex.

Difficult Extractions

Certain teeth resist attempts to remove them.

Where there is a possible chance that the tooth may respond to the forceps and simple applications of an elevator, the patient can be informed that you will gently attempt to loosen the tooth, but that it is of such a type that it will likely fracture. In many cases, these teeth will have strength enough to slightly expand the buccal or lingual wall and with care may be removed in one piece. If they do fracture, a simple application of an elevator may accomplish the desired result. If it does not, the root can be dissected out.

Where judgment and experience show that a simple method may prevail, it should be given a chance.

Where an X-Ray of the area shows that it is a physical impossibility to remove the tooth simply, it is unwise to attempt extraction in the ordinary way.

An operation for these extractions should be carried out on strictly surgical principles and the tooth or root carefully dissected out.

An incisor mesial to the field of operation is usually all that is necessary. The incision is so planned that the sutured flaps will rest on bone. The soft tissue is carefully retracted making sure that the periosteum is raised with the tissue. The bone over the root is removed with sharp chisels or gouges. The amount of bone removed, varies from a slight ledge around the neck to a complete bone removal exposing the bulb of a severe exostosis. The tooth can now be removed with a suitable instrument and the bone edges care-

fully smoothed down. The wound should be irrigated with a warm saline and the flap moulded into place and sutured if necessary.

Certain things should be remembered in an operation of this type. In removing an exostosed lower bicuspid, the mental foramen must be carefully guarded, even slight stretching of the nerve in retraction of the flap may result in anaesthesia of the lip extending over months. Simple removal of certain long-rooted molars or bicuspids, or certain impactions may cause numbness of the lip which may continue for a long time. X-Ray of the sockets of these cases, usually reveal an apparent direct relationship between the mandibular canal and the tooth and an apparent attachment or connection between the tooth and the sheath of the canal. Many an operator has been blamed for causing this condition, when in reality, he had nothing to do with it. Where the X-Ray shows this condition, it is wise to advise a patient that if numbness does result, it is not the operator's fault.

Discoloration of the part (ecchymosis) may result, despite all gentle manipulation, this will disappear within a few days leaving a yellowish stain for a day or two. This unpleasant condition will appear on certain patients, even on slight operation, and should cause no alarm.

A careful flap operation is a conservative operation where it is indicated, saving time and worry to the patient and operator and reducing trauma and after soreness to a minimum.

Post Operative Pain

An aseptic operation, proper anaesthetic technique, and an operative technique based on sound surgical principles, will minimize that, if a result of trauma.

Pain is not an accurate indication to the condition of the socket. It

varies with the individual. A pain that might keep one patient awake all night, may cause no particular discomfort to another. Sleep is the greatest aid that the dentist has at his command in combatting pain following an extraction. A slight amount of pain will cause great discomfort to a patient following a sleepless night, where the same amount of pain will pass unnoticed by one having a sufficient amount of sleep, thus, use of sedatives to relieve the patient and allow him to sleep should be the routine practice.

After the operation the patient is given the following printed instructions on the care of the mouth. These were given me by Dr. Fred Molt of Chicago.

A rapid and complete recovery may depend as much upon the patient's after-care as upon the operator's skill.

The blood clot that fills the wound should not be disturbed. A grayish appearance, a slight odor or slight swelling does not indicate infection.

After 24 hours the mouth should be frequently cleansed with a warm salt solution (one-half teaspoonful in a glass of water). Do not use Peroxide.

After extractions or oral operations some pain and discomfort must be expected. Difficult extractions, impactions and surgical operations in the mouth are severe operations. The after-care is particularly important in these cases.

Apply an ice-bag or cold wet towels to the face over the operated part to control swelling and bleeding. The ice-bags should be applied continuously for two hours, and for thirty minutes of each hour following. If intense pain should be caused by the cold, however, alternate or replace with hot wet towels. An Epsom Salt solution—1 lb. to 1 qt. water—for hot or cold applications is desirable. Never use dry heat (hot water bottle or electric pad) directly on the face.

For the control of pain after operation, use the tablets as directed on prescription. Stronger remedies or narcotics should only be taken on the advice or prescription of the physician or the operator.

NOTE:—Our instructions are not intended to supersede those of a physician, and a patient under a physician's care should consult him before resorting to internal medication.

To control excessive bleeding, sit upright and remain quiet. Apply cold applications externally. Place a firm pad of antiseptic gauze or cotton over the wound and bite down firmly for thirty minutes. Repeat if necessary. If the bleeding continues freely report to this office or call your dentist or physician.

To avoid or relieve a stiffening of the jaws or muscles, chew chewing-gum.

Bleeding into the tissues (ecchymosis) may cause a discoloration externally that may resemble a bruise. This will disappear in a very few days.

Small fragments of bone working to the surface as the wound heals should cause no alarm. The edges of the bony structure that remain after extraction are often mistaken for fragments of tooth. These are gradually absorbed.

Our interest in a case does not end with the completion of the operation. If after following these instructions you still have severe pain or if any swelling occurs after the wound has apparently healed, return for observation. If instructed to return at a special time, do so or report by telephone.

After extractions, especially where a number of teeth have been removed with Nitrous Oxide, the individual sockets are cleared out with the suction and the socket inspected. Small edges of amalgam often get into the lower sockets, these will cause a great deal of discomfort if left, at

this time, they can be easily detected and removed very simply, also loose edges of septum can be picked off and molar sockets with the buccal walls distended can be moulded back to place.

Following an operation where a difficult tooth has been removed, a patient may report within the next forty-eight hours that considerable pain is present. Examination shows the socket filled with apparently a healthy blood clot, the patient takes the sedative and applies the ice-bag or moist hot compresses, the pain subsides and he has no further trouble. This is post operative due to excessive trauma.

Then a patient reports suffering great pain, an examination shows the blood clot to be entirely broken down and a dry socket to be present.

Dry Socket

This is one of the most annoying causes of post operative pain. The dry socket is an inflammation of the alveolar process forming the tooth socket, caused by bacteria. The majority of dry sockets occur following the removal of pulpless teeth, often with no rarefaction involving the root ends, and in patients of lowered resistance. Local anaesthesia has been blamed by many men for the cause of this condition by causing local anaemia preventing a flow of blood to the part and thus delaying the formation of a protective blood clot, but we must not forget that cases of dry sockets also follow some extractions with Nitrous Oxide.

When a pulpless tooth is removed, the organisms that are probably present in the apical region are activated and a local circulatory disturbance occurs with the resulting inflammation of the marrow of the bone. Thus, we have an osteomyelitis present. If the bacteria are virulent and the patient's resistance low, the infection may spread through the narrow spaces until an extensive osteomyelitis follows. Fortunately, in

the great majority of cases, the condition localizes about the involved socket. The result of the inflammatory process may be of two kinds, either resolution or suppuration and death of tissue.

If the infection be a mild one, the inflammation will subside and the parts will be restored to normal. Granulation will then follow and the socket would start to heal.

If the patient is low or the bacteria are more virulent, the inflammatory exudate of the marrow due to the unyielding nature of the bony confines, cuts off all circulatory nutrition to the parts. Stasis occurs and the death of the bone follows. Sequestrae are formed and are extruded as a rule from the mouth of the socket.

The chief symptom is a great pain of neuralgic character, the patient is harassed and unable to sleep. Examination of the socket shows the bare bony walls with no sign of healthy granulations, and an offensive odour is present.

Should resolution occur at this time, the socket will become lined with greyish granulation which later becomes pink, and gradually the socket fills in and heals.

If suppuration sets in, the mouth of the socket will be covered with a mushroom-like growth with some pus present. Through time, the bone edges loosen. When suppuration takes place, pain is usually absent. At times, a pus discharge on the buccal gum, and usually indicates a loosening of a piece of bone. An incision will aid the exfoliation of the bony edge.

Treatment of Dry Socket

Patient suffering with this condition are not in the most agreeable frame of mind, and appreciate gentleness and kindness. The treatment is conservative.

The socket is gently irrigated with a saline socket and a light dressing

of quarter-inch iodoform gauze moistened with campophemque, aspirin and glycerine inserted and changed every twenty-four hours. Ice-bags are advised twenty minutes to the hour or if this depresses the patient, moist hot compresses, ten minutes to the hour.

Frosst 262, (Cinereum) are administered every four hours if necessary, to relieve the pain, the patient remains quiet and warm and the general resistance is kept as high as possible. If, after four or five days time, the pain still occurs, as soon as the dressing is removed, a light thin bladed curette is slipped to the bottom of the socket, and usually, some granulation can be felt. Holding the curette lightly in the fingers and without any anaesthesia the

socket fills with blood, our troubles with pain are usually over. As the socket has been dressed for four or five days with antiseptic remedies, the tissue will have been sterilized to the extent that danger of spreading the infection should be eliminated.

Frequently, after all treatment has been stopped, a mushroom-like growth will appear at the mouth of the socket. This growth bleeds easily, and upon pressure, pus exudes from it. This is an indication that some dead spicules of bone are present, often within the mass itself. The spicules can usually be removed with a tweezer, and the mushroom-like growth be made to disappear with a liberal cauterization with Trichloroacetic acid.

Proposed Changes in Constitution

There is at the present time a lack of general knowledge of the proposed changes in the Constitution and Bylaws of the Canadian Dental Association. At the same time there appears to exist some misapprehension of the purposes of the association as it will be carried on if these changes are accepted.

It has therefore been thought advisable that a statement should be given as to what the association expects to accomplish, what in brief are the proposed changes, and how these changes are to be put into effect.

The writer, being a member of the executive of the Canadian Dental Association, and the Alberta representative sent to discuss the changes proposed, may speak with some authority of the matters of fact set forth below. The opinions expressed and offered can have no value beyond those of an individual, except that they are an attempt to re-

flect the most common opinion of those most interested in this movement. They do represent the views of men from all portions of the Dominion.

For twenty-six years the Canadian Dental Association has carried on in our Dominion a hard struggle for growth and expression, in an effort to be of value to the dental profession of Canada. The effort has, I believe, been justified, and certain results, both tangible and intangible remain as a result.

It is now proposed to radically change the form of the association with the hope that its efficiency and value may be greatly increased.

On Saturday, June 2nd, a meeting of provincially appointed delegates from all the provinces in Canada is being called to discuss and agree on a new constitution for the Canadian Dental Association. Should an agreement be reached at this meeting, the constitution will be recommended

for acceptance to a meeting of the association which will be held early the following week. If the proposals are accepted the association will immediately begin to function under the new plan.

It should here be mentioned that through the kind courtesy of the Ontario Dental Society, accommodation, and the advantage of a splendid scientific program, have been offered freely to the Canadian Dental Association. The association is deeply indebted to the Ontario Society for the advantages and opportunity offered.

What will be the future policy of the organization, what will be the course on which it will set out, will be decided at the coming meeting in June. At that meeting the management of the association will be placed in the delegates' hands.

With each province having official representation on the board, it is hoped that the various official and unofficial organizations of every province in Canada will stand behind their delegates in an effort to develop a more worthwhile Canadian Dental Association. It should be pointed out that all the provinces, including Quebec and British Columbia, have voted whole hearted support of the movement. In these two latter provinces reside about forty per cent. of Canada's population. At the present time there is no other dental body which represents all Canada, and for this reason the support of every dentist, every voluntary and official body in the Dominion is asked for. If this support is given it will be possible to build up a strong virile organization, with a large membership, which may then speak with authority for the dental profession of Canada.

In the February number of "Oral Health" Dr. A. W. Faulkner of Halifax expresses very clearly and concisely his views on the subject of the relationship the Canadian Dental Association to the Dominion Dental

Council. Dr. Faulkner, who is the provincial delegate from Nova Scotia, has given the subject a great deal of thought during the last year. I would commend his letter to the delegates for careful consideration, and to all those interested in the association.

In case there may be in the minds of some, the fear that it is the intention of the Canadian Dental Association to usurp the field of the Dominion Dental Council, it should be stated that no such suggestion has ever been considered. On the contrary, at the delegates' meeting held in Toronto in 1927, this separation of identity and purpose was stressed very strongly by some delegates and accepted by all.

The present constitution, among the objects of the association states that the association shall be interested in "promoting the enactment of just dental laws". So that it might be clearly understood that such matters as standards and licenses were not part of the purpose of the association, the new constitution was drawn up with this clause left out.

In short it was felt that there is a large field for the Dominion Dental Council, and one for the Canadian Dental Association.

The Dominion Dental Council is doing a very valuable work in the seven provinces in which it is accepted. Whether in the future the other provinces may wish to join the council with a standard acceptable to all Canada is yet to be seen and rests with each province to determine for itself.

In the meantime all the provinces in Canada are willing to join in an effort to form a Canadian Dental Association truly national in character. With support from all and all willing to work together this can be done.

The steps taken so far can be briefly told:

A study was made by the delegates, of the present constitution, and those of the Canadian Medical Association, the American Dental Association, and the British voluntary Dental Body. Agreement was reached that the plan of government of the Canadian Medical Association most nearly met our needs. From this was prepared a constitution with some large sized patches from our own, and a few small patches added from the American constitution. The result may seem faulty, but it is hoped to correct some of the obvious defects at this year's meeting. No doubt it will be patched and repatched again in the years to come. It is the earnest hope of the delegates that a foundation has been laid for a workable constitution.

Three fundamental points were the subject of considerable difference of opinion. The first was the number of delegates which should represent each province. It was argued that all provinces should have equal voting power on the Board of Delegates, so that the larger provinces should not dictate the policy. On the other hand it was pointed out as not reasonable that one hundred and less dentists in some provinces and two hundred in others should have the same voice on the board as provinces like Quebec, with seven hundred dentists, and Ontario with eighteen hundred, out of the thirty-six hundred dentists in Canada.

It should be pointed out that neither of the larger provinces asked for larger representation, but a sense of fair play on the part of smaller ones suggested two delegates from each of the larger provinces and one from each of the seven others. This was accepted.

Another difficult problem to decide was the question of what provincial body should appoint the delegate or delegates. Some favored voluntary,

and others official bodies. This point has not yet been satisfactorily settled. In some provinces there is no province wide voluntary society. In others the voluntary societies cover complementary areas, and in others all the ethical members of the profession are not eligible for membership in the voluntary societies.

This will be a difficult matter to decide. The suggestion of Dr. Faulkner would seem to have a good deal of merit for those provinces which have no province wide voluntary society available to all ethical dentists. This includes most of the provinces. Briefly the suggestion is that the official provincial organization appoints the delegates and so all men in the province are represented. Only those however, who accept the Code of Ethics of the Canadian Dental Association may become members.

This is different from the Canadian Medical Association method. In their case the provincial voluntary associations are made branches of the Dominion body, and the delegates are sent from these branches. Such a plan is not feasible in our case from an economic standpoint, and also because we have in many provinces many ethical dentists in unorganized territory. Also in some provinces a membership limit is placed on the voluntary societies.

For these reasons no attempt has yet been made to define the provincial authority for the appointment of delegates, but some solution must be found in June for this difficult question. It would seem reasonable that the wishes of the individual provinces should be the basis of settlement and the delegates should meet with a clear view of the needs and wishes of the provinces they represent.

In conclusion the question of how best to obtain the membership of all ethical Canadian dentists, which it is the desire of the board of dele-

gates to do, presents a problem not yet solved. The membership fee to be asked is very small.

It is manifestly impossible for the association secretary to collect these small sums and look after the individual membership. The delegates feel that the local voluntary societies would co-operate to collect these fees and forward applications for membership from ethical men in their own groups and from the surrounding unorganized territory.

With all these agencies working, a large membership can be built up at a very reasonable amount of trouble and expense. With co-operation the Canadian Dental Association should

have a membership of a large majority of the ethical dentists of all Canada.

Embodied in this overlong statement is the result of the work done by, and the hope for the future of the delegates sent by the provinces to bring into being a Canadian Dental Association of greater value to Canadian dentists, and with a membership of the large majority of the dentists of Canada. Given the membership which is necessary, and the support which this represents, I believe the Canadian Dental Association will prove its value. It confidently asks this support from every ethical dentist in the Dominion of Canada.

Amalgam Failures

WHERE IS THE FAULT: IN THE ALLOY OR IN THE OPERATOR?

WILLIAM E. HARPER, D.D.S., CHICAGO, ILL.

Introduction

Of the test fillings made for me by experienced operators, over 90 per cent. leaked as soon as exposed to air pressure from within, and more than half of them were weak and unstable. I come prepared to make amalgam fillings, over 95 per cent. of which will be non-leaking, strong, and stable. This statement, if true, answers the question, "Where is the fault?"

Alloys made by reputable manufacturers may be considered high grade when containing 65 per cent. of silver. Alloys containing less than 65 per cent. of silver generally shrink too much, are commonly weak in their resistance to crushing stress, and flow to a dangerous degree. Alloys containing more than 70 per cent. of silver work too harshly, and set too quickly for general use. The slow-setting alloys are so deficient in many essential qualities, and are so wasteful of the operator's time, that I feel they are not worthy of consideration.

When high-grade alloys are used, all dangerous shrinkage and expansion, commonly observed in amalgam fillings, may be caused to take place during the mixing and the packing of the filling, at which time the faults will be corrected by the use of a correct amalgam technic, eliminating dangerous movement, and developing maximum strength in the finished filling. Alloys are made quick and medium-setting. Rapid and skilled operators may safely use the quick-setting alloys for the one

purpose of saving the operator's time. Average slow or slow operators must use the medium-setting alloys to be assured of the necessary time for thorough packing. During amalgamation (mixing in the mortar) we always have shrinkage; as setting predominates, we have expansion. If amalgamation (mixing) be made sufficiently complete in the mortar, and the amalgam tightly packed, practically no amalgamation remains to take place in the finished filling to cause shrinkage and expansion.

Amalgamation develops the following reaction: dental alloy, largely Ag_3Sn , combines with the mercury, as indicated by the equation: $\text{Ag}_3\text{Sn} + 4 \text{Hg} = \text{Ag}_4\text{Hg} + \text{Sn}$, and remaining excess mercury. The shrinkage observed in high grade alloys occurs during this physical change, followed by expansion, as setting predominates. Mixing in the mortar develops this reaction, time, and temperature of the mouth will develop a secondary reaction in the finished filling by diffusion, if unamalgamated particles and much excess mercury remain. Thorough mixing, orderly and tight packing will reduce this secondary amalgamation to so small an amount as to eliminate all danger of disturbance to adaptation. Rapid rubbing for two to three minutes (a small mix two minutes, a large mix three minutes) in a slightly dulled, deep glass mortar, with a pestle shaped to make contact with the curved bottom and the full depth of the sides of the mortar, are the imperative require-

ments for a complete hand mix. Shallow mortars and poorly shaped pestles prohibit a complete mix, and I emphatically condemn their use. A mortar and a pestle of proper size and shape are of the first importance; a means to measure accurately the time of mixing (two to three minutes) is of second importance; and both are absolute requirements for perfect results. This simple detail of operative procedure is woefully neglected, and accounts for many of the dimensional changes that time develops in our amalgam work.

Plasticity

Insufficient plasticity has been the rock on which we have wrecked 70 to 80 per cent. of our amalgam fillings. Adaptable plasticity of the amalgam during the process of packing against cavity walls and margins is the most important detail of operative procedure necessary to adaptation. The profession has failed to make the distinction between a workable and an adaptable plasticity. This distinction must be recognized to insure the necessary plasticity. An ordinary mix of a quick setting alloy remains adaptably plastic two to three minutes only; and in the average large occlusal or large proximo-occlusal cavity two to three minutes is insufficient time in which to apply a thorough packing technic. To increase this too-short packing time, we mix quick-setting alloys decidedly plastic, retaining much of the excess mercury until adaptation is secured, after which it may be readily and completely removed by forcible and orderly packing. We may build fittings to perfect form and strength with a workable plasticity, but we must have adaptable plasticity to make a non-leaking filling.

Crepitus developing during the application of orderly packing indicates loss of adaptable plasticity, although the mass may remain easily

workable and appear to be smoothly plastic.

Tamping

Tamping in its effect and purpose is similar to agitation, or jarring a plastic mass. Tamped amalgam settles or flows without break into all surrounding angles, and against all cavity walls as a solid layer, free of air voids, retaining its original plasticity as it flows to exact place. All that now remains to be done is to compress it forcibly to remove the excess mercury, and wedge the amalgam into pressure-contact with the cavity walls, at which moment it will immediately harden and stay put. When amalgam is packed to place by force, instead of by tamping, it perceptibly stiffens with each thrust of the plugger. In this manner it loses its adaptable plasticity before adaptation is secured, and a leaking filling is commonly the result. By tamping we place and build the amalgam as a layer free of all air voids, retaining its original plasticity. As we compress this solid layer of amalgam it cannot crack or break because the solid layer by which it is surrounded holds the amalgam under the plugger-face to receive the maximum compression.

For these reasons we should place and build our amalgam by tamping, resorting to forcible packing for the sole purpose of removing the unattached tin and excess mercury, and finally to wedge the amalgam into the tightest possible pressure-contact with the cavity walls.

Condensation

With the amalgam placed and built by tamping, in the new technic, the one purpose of condensation is to express the tin and excess mercury, and to drive and wedge the amalgam into pressure-contact with the cavity walls and margins. Very few amalgam operators pack amalgam with sufficient force to develop pressure-contact to cavity walls, and to remove reasonably well the tin

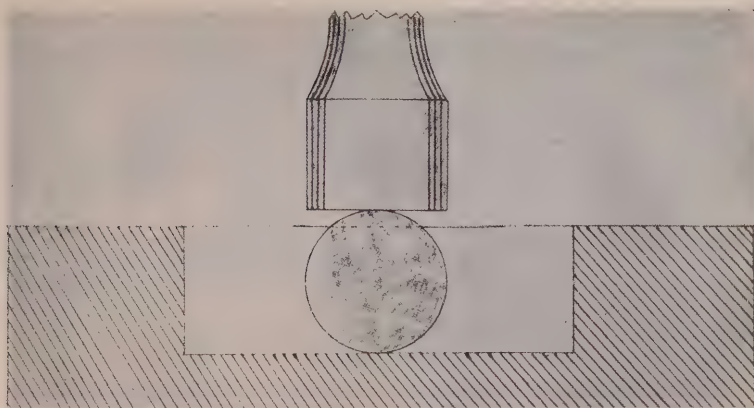


Fig 1—A ball of amalgam placed in a cavity as shown in Fig. 1, when packed with one thrust of a large plugger will break and crack as it spreads into the surrounding space, as illustrated in Fig 2; and subsequent packing with the same plugger will fail to completely eliminate these voids.

and excess mercury. A weak, leaking and unstable filling is the result. A filling to be uniformly strong and perfect must be packed with an equally-applied force of nine to sixteen pounds, which is best accomplished by orderly stepping the plugger in one direction from the center of the filling to the cavity walls.

Packing done without order makes a filling weak and defective in spots, and develops many mercury pockets. Packing done by an orderly applied force, working from the center of the filling, condenses each part of the filling equally, and the excess mercury is kept moving in one direction, outward, where it is at all times free to appear on the surface, to be removed as it accumulates.

Stepping the Cavity Walls

In packing the amalgam we find the round pluggers the most generally applicable. In packing against cavity walls with such pluggers, we fail to compress small triangular areas between the steps; at such points excess mercury will be pocketed and imperfections will occur.

Forcibly stepping the cavity walls

with a plugger small enough to penetrate to the depth of these uncondensed areas is absolutely necessary to remove pocketed mercury, to correct minute defects, and again to wedge the amalgam into the tightest possible contact at this vulnerable point. As the filling approaches completion and the cavity walls are covered, the mercury should be pinched out of the remaining mass to the point where it still remains workable. The cavity should then be filled with an excess, covering well all margins, after which we condense thoroughly. This final condensation may be done with the mallet.

If a quick-setting alloy has been used, we may proceed immediately to carve the occlusal surface with a sharp discoid excavator about 3 mm. in diameter, cutting lightly towards the cavity margins. The two to three minutes taken for the carving will permit the amalgam to harden sufficiently to permit the safe removal of the matrix, by drawing it rootwise to the buccal or lingual, if the amalgam has been tightly packed. We now trim away the overlaps on the proximal surface, and burnish the

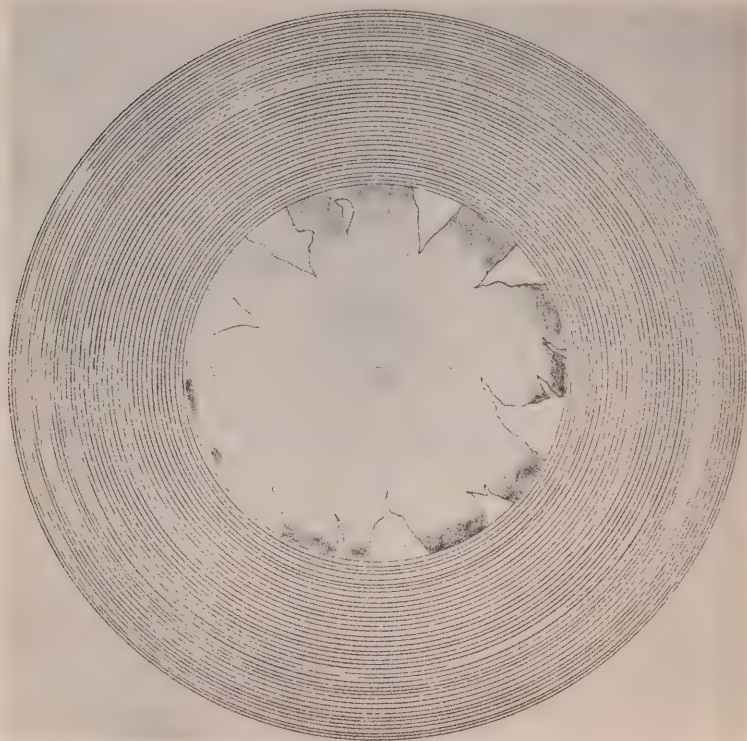


Fig. 2—Illustrates how amalgam cracks as it spreads from under the packing force; and subsequent packing with the same plugger will fail to completely eliminate these voids.

amalgam lightly with a root-canal plugger bent to reach all parts of the proximal surface, followed by lightly burnishing the occlusal surface, which completes the filling at one sitting.

After securing the matrix, where one is necessary, I always insert a tapered wooden toothpick, generally from the lingual, to wedge the matrix into close contact with the gingival cavity margin, by which means we help to enlarge the interproximate space, and avoid any overlap at this point.

Packing Pressures

During the past few months I have been gathering, from members

of the profession, a record of the pressure exerted in packing amalgam fillings. Up to date, I find about 40 per cent. of the operators pack with a force averaging under seven pounds. Nine to sixteen pounds of orderly applied pressure is required to remove dependably the tin and excess mercury, and to secure adaptation. Many failures will result with packing pressures of seven to nine pounds, and uniform failure will result when fillings are packed with less than seven pounds.

A tightly packed amalgam filling requires no grooves and undercuts to retain it; parallel walls and a square seat will retain the largest amalgam

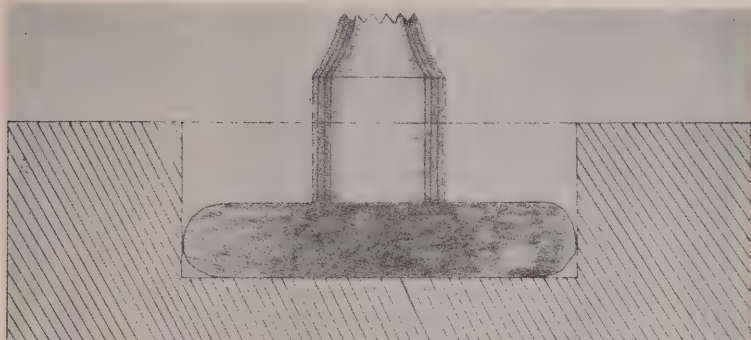


Fig. 3. A side view of amalgam after packing with one forcible thrust of the plugger (note the rounded edge). Where the crest of the rounded edge makes contact with the surrounding walls it prevents further spreading in the directions of line angles, and particularly toward point angles, bridging an angular void. Naked eye defects are *always* located at *point* angles.

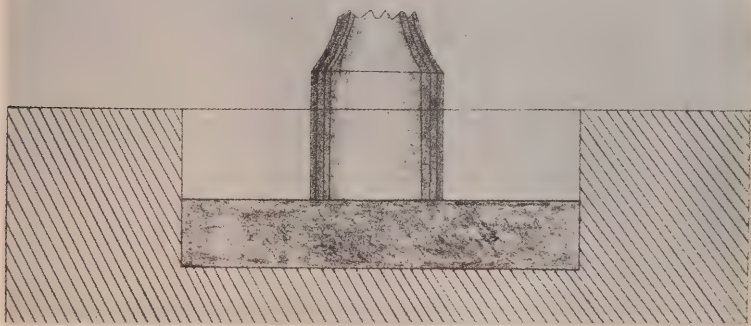


Fig. 4—Amalgam jarred into a cavity will flow as a solid plastic layer into contact with surrounding cavity walls and angles, free of breaks and voids, as illustrated in Fig 4. Tamping will accomplish the same purpose. It is easier to avoid cracks and imperfections in placing the amalgam by tamping than it is to eliminate them by forcible packing.

restoration when packed with nine to sixteen pounds.

Purpose of Tin in Amalgam and Its Attendant Dangers

My experimental and clinical test-work leads me to the conclusion that tin alone is responsible for the flow observed in fillings made from high-grade alloys. The remedy will be found in the use of an orderly packing of sufficient force to express most completely the unattached tin and excess mercury. The more complete-

ly the finished filling is made up of the compound Ag_2Hg_4 and possibly a similar compound of copper and mercury, the stronger and more stable the filling will be.

Tin in amalgam serves three purposes; it facilitates amalgamation, lubricates the amalgam so that it moves on itself without drag when packing, and retards the setting sufficiently to provide time for thorough packing. After these purposes have been served, the more com-

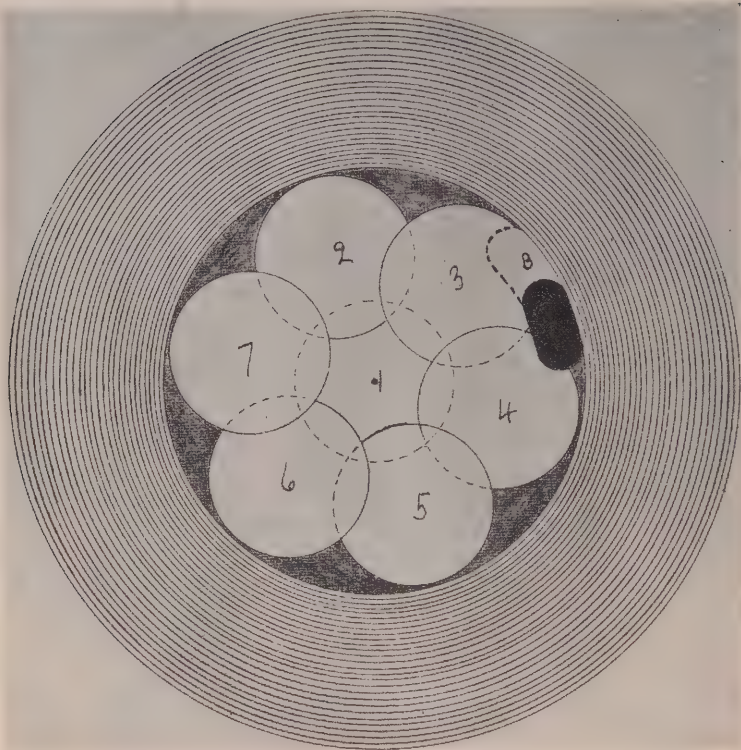


Fig. 5—Intended to illustrate orderly packing. After placing amalgam as a solid plastic layer by tamping we start to pack the amalgam forcibly at the centre of the filling, stepping the plugger as indicated by the numerals 1, 2, 3, 4, 5, 6, 7. This orderly movement of the plugger from within out keeps the excess mercury moving in one direction, outward, where it is free to come to the surface to be scraped off with the side of the plugger. Orderly packing gives equal condensation throughout the filling. The final condensation is made by stepping in one direction once around the cavity walls with a very small oval plugger.

The reduced size of the plugger greatly increases the packing force applied. The small area makes it possible to penetrate to the depth of pockets commonly located about the cavity walls, to correct minute imperfections and most forcibly to express the final excess of mercury. Irregular packing results in unequal condensation and develops many mercury pockets which cause failure to express much of the excess mercury.

pletely we remove it, the stronger and more stable the filling will be. Copper amalgam does not flow, probably because it contains no tin.

Pulp Protection

Many more cases of pulpitis occur under amalgam fillings than with

any other permanent filling material because (a) amalgam is depended upon as a last resort; (b) we do not prepare the cavity with the same care as for gold, commonly leaving decay in close contact with the pulp and (c) we do not recognize the ne-

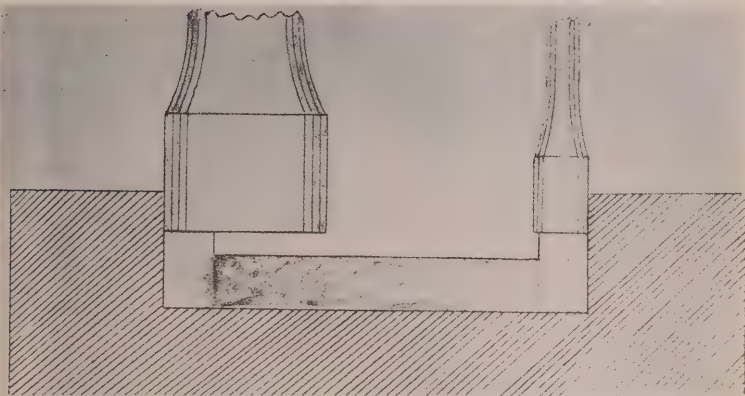


Fig. 6. Intended to illustrate the penetrating power of the small plugger. Small areas or pockets insufficiently condensed require the use of pluggers small enough to penetrate to their full depth. With a large plugger you cannot condense deeper than contact of the face of the plugger with the amalgam previously condensed.

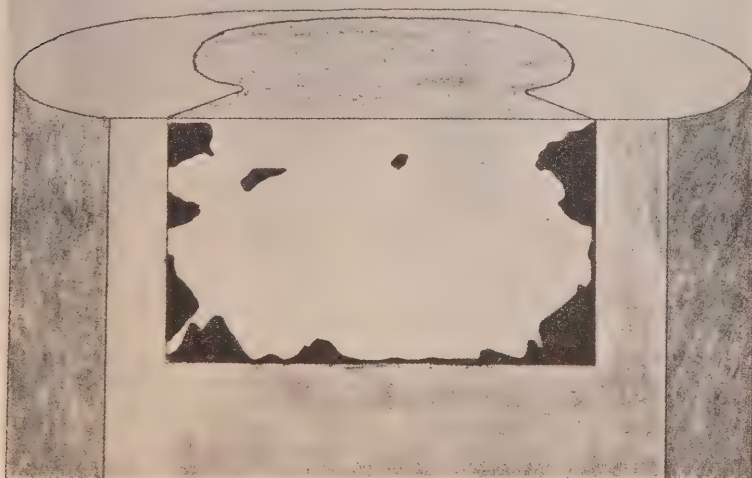


Fig. 7—Of the test fillings made for me as long as ten years ago, over 50 per cent. revealed naked eye voids as shown in this diagram. Since that time the profession has gradually recognized the great need and importance of a decided plasticity when filling proximo-occlusal cavities, and the naked eye appearance of the test fillings made for me has greatly improved, seldom showing other than minute naked-eye defects, generally located at the point angles.

cessity of protecting the thin yielding wall of dentin, immediately over the pulp, from packing pressure applied at this point when inserting the filling. This dangerous pressure against the pulp, if developed, remains as a permanent irritant to be gradually increased, and subsequently aggravated into pain by thermal changes that would have been tolerated in the absence of this irritating pressure.

Summary

Proportions of alloy and mercury need not be exact, but mercury should always be in perceptible excess during the mixing. A considerable excess during the mixing will do no harm, but a slight insufficiency is dangerous.

The best and only dependable guide to insure a complete mix and adaptable plasticity is accurate timing.

Plasticity free from crepitus during the procedure of orderly packing is imperative to make a non-leaking filling.

Fillings must be placed and built by tamping (not condensation). Following tamping we condense to remove the unattached tin and excess mercury, and drive and wedge the amalgam into pressure-contact with the cavity walls.

Orderly packing and stepping the cavity walls has proved the best procedure to insure equal condensation and the most complete removal of excess mercury, and is the most effectual technic to make air-tight adaptation as the final detail of the packing procedure.

The use of a good alloy does not guarantee a good amalgam. The dentist makes the amalgam, not the manufacturer of the alloy, and the amalgam is only as good as the mixing and packing process applied by the operator. Weak packing force will always make a soft, unstable filling, however good the amalgam used. A soft filling loses its margins

by wear, developing the black ditch, which many have considered due to spheroiding or to excessive shrinkage.

However good the alloy used, we must pack with an orderly applied force of nine to sixteen pounds to make a uniformly perfect filling.

The strength and stability of the finished filling is in proportion to the amount of tin and excess mercury expressed in the packing. The more tin and mercury expressed, the stronger and more stable the filling.

The average sized mesio or disto-occlusal cavity filled with a medium or slow-setting alloy will require as much of the operator's time as would be taken when restored with a gold inlay. If this be true, how can we justly charge a reduced fee for our amalgam service?

Average sized proximo-occlusal fillings can be inserted and finished at one sitting of fifteen to twenty-five minutes when quick setting alloys are used. The same cavity filled with a medium or slow-setting alloy would require forty to sixty minutes, necessitating a second appointment to make an equally good finish. To make it possible to collect a just fee for our professional service, under these circumstances, we must learn to use the quick setting alloys to reduce justly the cost of our service to the public.

Incomplete mixing and insufficient plasticity will make a leaking filling that may be strong in its resistance to crushing stress and flow if packed with force.

Weak packing makes a soft filling that will develop every fault characteristic of bad amalgam work.

A correct amalgam procedure, that will assure a uniformly perfect filling, is dependable upon the application of the following order of procedure: Proper cavity preparation; the use of a perceptible excess of mercury in the mixing; thorough

mixing for two to three minutes; a plasticity free from crepitus during orderly packing, for all except small and shallow cavities; thorough, orderly, and forcible packing; stepping the cavity walls; proper proximal and occlusal form and finish; a firmly-held matrix wedged at the gingiva when the use of one is necessary; protection of the pulp from packing pressure in all deep cavities.

You may jar amalgam into an impression, using the pressure of the finger as you jar it for five or ten seconds, and make a 100 per cent. perfect model without failure; but you cannot secure air-tight adaptation by this procedure, because it will not develop pressure-contact of the amalgam to cavity walls. We must drive and wedge amalgam against cavity walls to secure pressure contact.

It has been the germicidal power of most good amalgams that has saved the teeth, not our operative skill and care.

Amalgam is the most generally used and the most abused of filling materials, representing more than 50 per cent. of the income of the average dentist. Why not honor our profession by its more intelligent use?

Discussion

John T. Hanks, D.D.S., F.A.C.D. (New York City): "The Manufacturer makes the alloy, the dentist makes the amalgam." This statement, made by the essayist, struck me with the force of a slogan, and emphasizes a fact which should be thoroughly understood by every operator using this particular filling material. There is an interdependence between manufacturer and dentist which is not clearly defined. The merits of different alloys are heralded, claims of results of laboratory tests showing valuable properties are glibly discussed, until the dentist is convinced that the mere use of this or that alloy is all that

is necessary to accomplish wonders, losing sight of the fact that the success or failure depends almost entirely on his own efforts. The most emphatic stress must be laid on the fact that good amalgam fillings are the result of careful painstaking manipulation on the part of the dentist. The best alloy ever made can be so mishandled that a filling having the appearance and consistence of Swiss cheese will result. I would like to submit two charts indicating in concise form the factors within the control of both manufacturer and dentist, and also the responsibility of both manufacturer and dentist.

A. Factors within the control of the Manufacturer

1. Choice of ingredients
2. Proportions of ingredients
3. Methods of preparation
 - (a) Melting
 - (b) Cutting
 - (c) Annealing

a. Responsibility of the manufacturer

1. Furnish alloys of a desirable character
2. Inform the dentist of the true form and nature of the alloys furnished
3. Inform the dentist of the most advantageous way of manipulating the alloys

B. Factors within the Control of the Dentist

1. Correct operative technique
 - (a) Cavity preparation
 - (b) Matrix application
2. Ratio of mercury to alloy
3. Time and method of using
4. Technique of insertion of the amalgam
 - (a) Adaptation and condensation
 - (b) Removal of excess mercury
 - (c) Carving
 - (d) Polishing
- b. Responsibility of the dentist
 1. Prepare all cavities according to accepted scientific procedure

2. Apply a matrix in all three wall cavities
3. Use sufficient mercury to produce a smooth plastic mix
4. Mix vigorously in the mortar for at least three minutes
5. Insert in plastic form to secure adaptation to the walls of the cavity. Condense by tamping and stepping. Remove excess mercury. Carve to anatomical form
6. Polish at a future sitting.

I wish to thank the essayist for his untiring efforts in spreading the light of better amalgam technique.

R. Ottolengui, M. D. S., D. D. S., LL.D., F.A.C.D. (New York City): I really felt very grateful when I received an invitation to discuss this paper, and for the following reason. Last summer, at our State Society meeting, I presented a report on amalgam based on the investigations of the Research Committee for the previous year. This report was published in the Dental Cosmos for October 1925, and since its appearance I have received numerous letters which indicate that my position has not been comprehended. I have evidently left an impression upon some minds that I am opposed to amalgam as a filling material. This is not true, and I am glad of this opportunity to again state my views.

In the report above alluded to, I recorded the fact that I had examined 1067 extracted teeth which contained amalgam fillings, and that the failures were as follows: Buccal surfaces, 69 per cent.; approximal surfaces, 80 per cent.; occlusal surfaces 17 per cent.; percentage of failure for all surfaces, 50 per cent.

These figures have been criticized severely. It has been claimed that the examination of extracted teeth is no fair criterion of the dependability of amalgam, since extracted teeth are naturally teeth that have been

discarded; that probably many of these teeth had been extracted for the very reason that caries had supervened about the amalgam fillings, in many cases even producing toothache because of pulp exposure. This contention is perfectly sound, and there is no doubt that, like all statistics, these are somewhat faulty. Nevertheless, certain facts were brought out which were undoubtedly both accurate and significant.

At the moment, however, I wish to compare the statements of that report with the claims of to-night's essayist. It has been said that I am prejudiced against amalgam, and that, when I arraign it as giving inadequate service to the poor, claiming that amalgam is not a cheap filling, I have shown an ignorance of the needs of the poor, and have become an advocate only of high priced operations. Our essayist, who undoubtedly comes to us as an advocate of amalgam, believes that good service can be rendered to rich or poor with amalgam, yet what do we find him saying? At the very opening of his paper he says: "Of the test filling made for me by experienced operators, over 90 per cent. leaked as soon as exposed to air pressure from within, and more than half of them are weak and unstable."

Think of that, my friends, and compare these words with my own. In my report I declared that an examination of amalgam fillings from unknown operators, many of whom must have possessed only mediocre ability, and some, if I might judge by their work, having no real ability at all, showed that in approximal cavities, the most difficult situation of all, 80 per cent. were failures, and in a statistical survey of all localities, failures were placed at 50 per cent. Yet Dr. Harper reports to us that experienced operators made test fillings for him and that over 90 per cent. proved to

be leaky. Does not this appear to substantiate the claim of the research committee that amalgam used as a "cheap" filling material is not reliable?

But we have a more definite statement from the essayist on this point of amalgam as a cheap filling. Later in his paper he says, "The average sized mesio or disto-occlusal cavity filled with a medium or slow-setting alloy will require as much of the operator's time as would be taken when restored with a gold inlay. If this be true, how can we justly charge a reduced fee for our amalgam service?" Such words from an amalgam advocate fully absolves me against the charge of being an amalgam opponent.

I said a few moments ago that there were certain facts brought out in last year's research which were significant. One important fact was that only a small number of amalgam fillings showed evidence of having been polished, the percentage reported in my own finding being only 9 per cent. As this was based upon an examination of all surfaces, and as of those polished by far the greater number were in occlusal cavities, it follows that on the approximal surfaces, where polishing as a protection against recurrence of decay is most needed, real polishing is seldom accomplished. Indeed, the only approximal fillings that I found absolutely polished were in cavities that did not extend to the gingival margin, and in teeth where it was evident from the stains at the gingival area that no adjacent tooth had been present.

After the presentation of this report, one of our best amalgam operators suggested that amalgam packed against a perfectly smooth matrix would result in a surface sufficiently smooth for all practical purposes. Since hearing this suggestion I have experimented with it, and while I have not used all the amalgams on

the market, I do not find that with high grade amalgams this theory is not a safe one.

It is customary, I think, to use a matrix which is removed after the insertion of the filling. In such cases it is manifest that the surface of the matrix would have little if any influence upon the surface of the amalgam after the latter had set. In my experiments, therefore, I followed my own invariable custom of using a continuous band as a matrix, which being left in place for two or three days, prevents all possible disturbance of the amalgam during the crystallization period, and should result in the polished surface claimed, if such a result could be had with any matrix method. In all experiments thus far, I find the same granulated surface that would be found were no matrix used. Indeed, the surface which rests against the matrix, if anything, is worse than the surface that is not covered. It appears to me more difficult to get a smooth surface to amalgam by merely packing it against a smooth matrix than can be had where the surface is left exposed and can be ironed down with a burnisher before the patient leaves the chair.

These experiments also brought out another fact, which however, was well known to me, and presumably to others, and that is that perfect marginal adaptation cannot be procured with a matrix; or rather such margins will not be sufficiently perfect to render it permissible to leave them as found upon removal of the matrix. Hence, it follows that whether a matrix be used or not, the polishing of the approximal surface is absolutely requisite, and must be done after the amalgam has fully set.

The technique presented by the essayist, which is probably sound, would appear to preclude the use of amalgam entirely in certain cavities where it is very often used. Imagine

a cavity in the distal surface below the contact point, and reaching to or below the gingival margin. Dr. Harper tells us that, "We must drive and wedge amalgam against cavity walls to secure pressure-contact." How may this be accomplished in the difficult situation suggested? It does not seem possible. In such situations, however, I have had my best results with the following technique: After preparation of the cavity, which understand, does not reach the occlusal surface,² I fit a continuous band of very soft and very thin copper, so that when placed over the tooth crown it hugs the tooth tightly and also passes below the gum margin. The matrix is removed and the amalgam inserted and packed as tight as possible. The matrix is then slipped over the tooth and filling, and firm burnishing against the matrix will further compress the amalgam excess oozing out at the occlusal margin of the matrix where a slight space must have been left. This technique, of course, would result in an approximal space and lack of approximal contact, a danger, by the way, common with all methods of using amalgam in approximal surfaces. However, an attempt is made to avoid this. The teeth must be well separated in advance. Then, after using the matrix to produce compression of the approximal filling, the matrix is removed, the margins wiped clean and amalgam is added to full contact with the adjacent tooth. When fully set, the approximal surface is thoroughly polished, without, removing sufficient material to destroy the contact point. That is to say, you do this if you know of any method of accomplishing it. Perhaps it is the difficulty of doing this that explains the fact that so few men even attempt it.

I must not make this discussion more lengthy than the essayist's paper, which I might easily do. Let

me, however, ask a question and suggest an answer to it.

The essayist truly tells us that in the very situation where a perfect filling is most needed, amalgam cannot be inserted successfully for a reduced fee—that it will require just as much of the operator's time as would a gold inlay. If so, why not a gold inlay? Is the additional expense of the actual gold sufficient to make it worth the patient's while to have amalgam instead of a gold inlay? I think not. Why then, should we ever use amalgam? We should use amalgam in those situations, and under those conditions, where a better filling may be made with amalgam than with any other material. If we would restrict our use of amalgam to these cavities and, these only, then we must learn just which amalgam is the best amalgam, and what is the best technique for using that amalgam. The essayist's paper should be valuable to those who use amalgam in this manner *only*, as naturally they desire to give their patient the best service possible, be he rich or poor.

In conclusion, I must venture a reply to the essayist's main question. His paper is entitled: "Amalgam failures: where is the fault, in the alloy or in the operator." The fault lies in both. The operator is at fault, using the word operator in a collective sense, as we use the word army. The army of dentists is at fault when it uses amalgam because it uses amalgam mainly for the reason that it must accept a lower fee than if gold were used; or amalgam is used because it seems less work; or because the dentist has too large a practice and he can fill more teeth per day with amalgam than with gold. Amalgam so used, accounts in large part for failures, and this constitutes a degradation to our profession. This causes my protest against amalgam; not any inherent shortcomings in the material itself.

There is a fault, however, in the materials that are sold under the common name of amalgam alloy. Compare the facts with gold. If we use gold foil for filling, regardless of where bought, we know that it is approximately 1000 fine. If we use gold for making an inlay, we know just what we are using. It may be pure gold, it may be alloyed with other metals, but we know exactly what we are using. Is this true with amalgam? It is not. When Dr. Harper asks where is the fault which causes the failure of amalgam fillings, I might well ask him: "What amalgam are you talking about?" When an amalgam advocate comes before us and tells of the marvelous results that may be obtained with amalgam, does he tell us what amalgam he is talking about? Can all the men in the audience go back to their offices and obtain similar results with the many different "amalgams" which they have in stock?

Where then lies the fault? What have the research workers in the great American Dental Association done for us along these lines? Why do they not investigate this, tell us what amalgams are reliable, and list all others as useless nostrums? Nostrums! That is just what many amalgams are. Quite as much so as our vaunted pyorrhea cures. I thank you.

Dr. Harper (in conclusion): I am sorry Dr. Ottolengui did not attend the clinic that he might have observed the perfection in adaptation and finish of the test filling made by a proved and correct amalgam technique, which I presented. Time will not permit me to answer all the points discussed. Actual demonstrations require much less time, are more convincing, and, in fact, those that were made were indisputable, and covered most of the points raised, to which all that saw them will testify.

Statistics are our best guide, when

they are complete, but those presented by Dr. Ottolengui could not be so considered, as compared with records of accurately measured test-work done under irregular methods of procedure and other tests done under standardized operative procedures, by men experienced in the work, with accurate measurements of the results obtained. Statistics gathered under definite operating conditions, such as are presented in the correct amalgam technique I have used, afford a very different conclusion as to the usefulness of amalgam and would have left little opportunity for the arguments presented by Dr. Ottolengui. I am sure that the demonstrations I have made at this meeting justify this statement of the possibilities of amalgam, when its manipulative needs are understood and applied as shown, and I am even hopeful that they would have proved convincing to Dr. Ottolengui.

Dr. Ottolengui quotes me, as a reason for condemning the use of amalgam in our effort to render cheaper dental service to those who need it, as follows: "The average sized mesio or disto-occlusal cavity filled with a medium or slow-setting alloy will require as much of the operator's time as would be taken when restored with a gold inlay." But generally with the procedure I present, the same filling could be inserted and finished in one-third of the time. This would indicate that amalgam does present opportunities for the saving of the operator's time as compared with that taken in the use of gold.

Dr. Ottolengui reported that one of our best amalgam operators suggested that amalgam, packed against a perfectly smooth matrix, would result in a sufficiently smooth finish to meet the practical needs. This observation is absolutely correct—another detail demonstrated repeatedly at this meeting, irrespective of the fact that Dr. Ottolengui could not secure

satisfactory results by the operative procedure he applied in the test work he did. The work I did was removed from the cavity and matrix immediately on completion of the packing of the filling, and was passed to the audience for examination; and the verdict I leave to them—another reason why Dr. Ottolengui should have honored me with his presence during the clinics.

Dr. Ottolengui: But you said it could not be made with amalgam.

Dr. Harper: I said with a medium or slow-setting amalgam.

Dr. Ottolengui: Am I to understand that you have, or know of, or can tell me, of, an amalgam that can set in thirty minutes, where the

crystallization and the surface of it will not change? If so, will you tell me the name of it?

Dr. Harper: I said an amalgam sets hard enough for me to work on. I did not say the crystallization was complete at the end of that time. As a matter of fact, it takes many hours, but it hardens enough for me to carve to shape and finish in fifteen or twenty-five minutes. This is another fact that was demonstrated for those in attendance.

I have many notes left that I would like to discuss, but I find that I am already intruding on the time of the succeeding essayist, so trust you will forgive me if I stop now.

From Journal of Dental Research.

DENTAL SOCIETIES

Ontario Dental Association, June 4 to 7

Montreal Dental Assistants' Association

The monthly meeting and Clinic of the Montreal Dental Assistants' Association was held at McGill University, Dental Faculty, Monday, March 19th, 1928 at 8.30 p.m. Miss R. Firth presided. The guest-speaker for the evening was Mr. Russell A. Copeman, President, Montreal Study Club of Dental Technicians, on the subject of "Construction of a Porcelain Jacket Crown." Mr. Copeman introduced his subject by giving a brief talk on the use and advantages over the gold crown used. He drew a series of diagrams of the construction, followed later with the practical demonstration of the various steps involved in its making. He pointed out that the Dental Assistant would benefit a great deal by learning this work and thereby bettering herself materially, and prove a greater asset to the dentist.

The Chairman thanked the speaker on behalf of the Association. The meeting then adjourned.

The Montreal Dental Assistants' Association held their event of the 1927-28 season at McGill University Dental Faculty on Monday, April 16. Miss Ruth Firth, president, in the chair. The event was a social.

The president in her annual report congratulated the society on its past achievement and felt confident of still greater accomplishments in the future. She also thanked all those who helped to make the work of the association successful, and appealed to the members for continued co-operation. Miss

E. Voysey read the secretary's report, and Miss Mary McLean, treasurer, read the financial statement. All these reports showed progress in the affairs of the association.

Election of officers took place with the following results: Miss R. Firth, President; Miss E. Voysey, secretary; Miss M. Higgs, recording secretary; Miss E. Moye, first vice-president; Miss M. Power, second vice-president; Miss E. Gobeille, French secretary; Miss Mary McLean, treasurer; Mme. A. R. Smith, chairman, French publicity; Miss M. McKee, chairman, membership committee; Miss Rachel Ratner, chairman, publicity.

A vote of thanks was unanimously passed to the retiring board. A vote of appreciation was expressed to Dr. A. L. Walsh, Dean of McGill University Dental Faculty for introducing the idea of holding monthly clinics, and to the professors of the Dental Faculty who addressed the society during the session.

Dr. McLelland, Professor, McGill University Dental Faculty.

Dr. F. H. Baxter, Professor, McGill University Dental Faculty.

Dr. J. S. Dohan, Associate Professor, McGill University Dental Faculty.

Dr. Wesley Bourne, Anesthetist and lecturer of McGill University.

Mr. Russel A. Copeman, President of Montreal Dental Technicians.

Special appreciation was expressed to Dr. G. S. Cameron, Professor Prosthetics, McGill University Dental

Faculty for the continual moral support since the society was organized.

A vote of thanks to Dr. G. Franklin, Orthodontist, lecturer of McGill Dental Faculty and Dr. J. S. Schacter for the use of their instruments for the practical demonstrations.

Appreciation was also expressed to Miss R. Ratner for the splendid work which she has performed for the association during the past year, and particularly for the excellent report which she brought from the Detroit

convention last fall which proved a great encouragement to all the activities of the association.

A resolution of appreciation was passed both to English and French press for the sympathetic co-operation in reporting the work of the association.

A resolution was passed requesting all dentists in the city to urge their assistants to join the M. D. A. A. both in the interests of the profession and of the public at large.

Federation Dentaire Internationale (F.D.I.)

TWENTY- SECOND SEASON, COLOGNE, 1ST-5TH AUGUST, 1928.

PROVISIONAL PROGRAM.

Wednesday, 1st August—8.30 p.m., Reception at Disch Hotel by the local Committee.

Thursday, 2nd August—10 a.m., Formal Opening meeting in the University. Awarding of the Miller international Prize to Prof. Dr. Dieck. 11.30 a.m., Opening of the Manufacturers' Exhibits in the University, 12 a.m., Meeting of the Executive Council. 2 p.m., Meetings of the Commissions. Evening, Reception by the Municipality in the "Gürzenich" oder in the "Pressa."

Friday, 3rd August—9. a.m., Meetings of the Commissions. 2 p.m., Visit to the chemical works at Leverkusen.

Saturday, 4th August—9 a.m., Meetings of the Commissions. 2 p.m., Clinics and Demonstrations organized by the "Verein deutscher Zahnärzte in Rheinland und Westfalen." 5 p.m., Meeting of the Executive Council officers to receive the Commissions reports. 8.30 p.m., Banquet at the F. D. I. at Disch Hotel.

Sunday, 5th August—9 a.m., Meeting of the Executive Council. 1 p.m., Closing Luncheon in the "Pressa".

Visit to the Exhibition.

All the meetings take place in the University. Headquarter: Disch Hotel.

THE 2T6 GRADUATES' CLUB

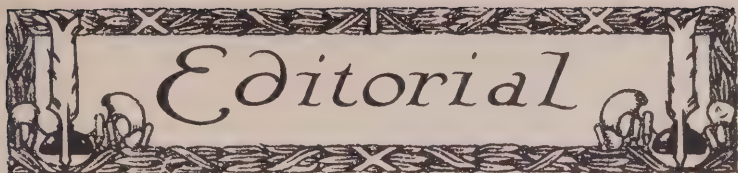
This club was formed in Feb., 1927, with A. J. Vince as President, and E. A. White as Secretary-Treasurer, for the purpose of keeping together the members of 2T6 who reside in or near Toronto, for mutual benefit and social fellowship. Also, to provide any possible assistance to members of 2T6 outside of Toronto in case of reunions or conventions, etc. Enthusiastic meetings have been held regularly every two months at Hart House, with several very interesting speakers, during the past year.

We will be glad to co-operate with and help any out of town members of 2T6 who intend coming here for the Convention, or who visit Toronto at any time.

GET IN TOUCH WITH US!

A. J. Vince, President.

E. B. Sisley, Sec'y.-Treas., 1363 King St. West, Toronto, Canada, Lakeside 0576.



Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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Vol. XL

TORONTO, MAY, 1928

No. 5

Economics in Dental Education

Should dentistry be taught by the preceptor or apprenticeship method alone, or by the college method alone, or by a combination of both? If by the preceptor method alone, how long should it take? and if by the college method, how long should it take? and if by a combination of both, how long should both take and what proportion of the total time should each occupy? In any case what should be the prospective dentist's preliminary education before beginning his professional studies? These are vital problems for dental educators and the public generally.

These problems have been variously answered yet in a more or less positive manner. There is a general tendency extending over many years. Whether rightly or wrongly, the preceptor method of teaching dentistry is gone forever. There is no doubt but much is lost by totally giving up this method. The tendency is to give all professional education in college. Our opinion is that a combination of both preceptor and college educational methods is superior to either provided there is as much care exercised in the selection of the preceptor as there is in the selection of the college. The proportion of time should be about 90% college to 10% preceptor.

The general tendency is to increase the total time in dental education. The increase in time has not always been made because graduates go out incompetent. There are many diverse excuses for increasing the time. Chief among them are a desire to prevent admissions to the ranks and to raise the professional attainments of those

still to enter. It must not be forgotten that recent dental requirements demand a broader education.

There has been a general tendency to increase the standard of admission, which on this continent is high school graduation, one year in college, and in a few cases two years of college. Thus there are four year courses counting from high school graduation, five year courses and six year courses. The five and six years are variously divided up; some colleges require their candidates to attend one year of college and then five of dentistry, while others require two years of college and four of dentistry, or two of college and three of dentistry.

There never was a time when dental educators were more out of harmony with each other on the matter of time and standards of education. All this tinkering with standards and time has come about too rapidly. Few, if any, schools have graduated candidates under one standard before they inaugurated another. Doubtless there are places for them all, but plunges in education are more hazardous than plunges in stocks. A fault in a student's education cannot be recouped by another plunge, as in stocks. There is only one chance at a candidate's education.

As we have often said, dental education is an economic problem in which the public is vitally interested. The more an education costs the more the public will have to pay for their dentistry.

For a great number of years certain universities in America and some abroad have divided the year's course into periods of three months each. These are so arranged that a candidate may enter any three months' course he chooses, but of course they must be in sequence. Thus four courses may be taken in a year. The student selects his own holidays. By this scheme a four year course of nine months each could be completed in three years, or thirty-six months as in the other case. To this ought to be added three months' practice with a preceptor, making in all thirty-nine months instead of forty-four. By this plan great expensive educational institutions are not left idle twenty-five to thirty per cent. of the year. Besides candidates who have completed high school, and two years of college, do not need four months' holidays each year. Young men of nineteen or twenty don't need more than the usual two to four weeks' holidays a year. It is unnecessary here to go into all the arguments in favor of such a plan. The public, the parents and the students see it at a glance. Students who spend much of their time in manual training do not need as long holidays as those who are engaged in mental exercises alone.

QUEBEC HONORS VETERAN IN PROFESSION

Quebec, Dec. 23.—Dentists of this district to-night banquetted Dr. Eugene Dorval, marking his 50th year in the profession, but particularly paying tribute to his discovery of apparatus by which power of ar-

ticulation is recovered for persons suffering from hare lip or perforated palate.

Dr. Eudore Dubeau, dean of the faculty of dental science in the Université de Montreal, conferred upon Dr. Dorval the degree of "Doctor of Dental Surgery" A. D. Honorem.

Oral Sepsis in Relation to Malignant Disease

Our knowledge of the causation of cancer has recently made a remarkable advance in the epoch-making work of Dr. Gye and Mr. Barnard. These workers have shown that cancer is a specific disease caused by a virus or group of viruses.

Gye states that: "Under experimental conditions the virus alone is ineffective; a second **specific factor**, obtainable from tumor extracts, ruptures the cell defences and enables the virus to infect. Under natural conditions continued 'irritation' of tissues sets up a state under which infection can occur."

This important statement supports the teaching of Sir Arbuthnot Lane that Cancer never occurs in a healthy tissue. It also appears to support the number of clinical observations of those who for many years past have been urging that chronic irritation, especially that due to bacterial activity, is the most important predisposing cause. That is to say, chronic sepsis, especially when prolonged for a number of years, breaks down the cell defences of the body and allows the cancer virus to infect.

If this is so, it is clear that my contention for the past ten or twelve years, that oral sepsis—because it is so common—must act as the most widespread of these predisposing causes of cancer, is correct.

Cancer occurs in those parts of the body which are subjected most frequently to chronic irritation,—namely, the sexual organs, the skin, and the alimentary canal. The Sixty-seventh Report the Registrar-General for England and Wales gives tables showing the number of deaths from cancer during the years 1901 and 1904, and the different parts of the

body affected. The number of deaths from cancer during these four years was 114,130, or 5.3 per cent. of the total number of deaths occurring in the whole population of England and Wales. In these tables 776 cases in the female, and 553 cases in the male sex are placed under the heading: "Parts not stated." Deducting these from the total gives the figures 112,801. Of these, 67,480 cases occurred in females and 45,321 in males. Of these in the sexual organs and 39,203 in other parts of the body. Now of these 39,203 cases, no less than 33,910 or 86.5 per cent., occurred in the alimentary canal and its associated parts. Of the 45,321 cases which occurred in the male sex, 1,109 occurred in the sexual organs. Of the remainder, 44,212, no less than 37,645 or 85.1 per cent., occurred in the alimentary canal or associated parts.

It will be seen then that the great majority of cases of cancer, apart from those of the sexual organs, occurred in the alimentary canal, the part most likely to be affected by septic conditions of the mouth.

In various papers upon this subject I divided these 112,801 cases into three classes, namely:—

Class 1.—Cases occurring in the alimentary canal and its associated parts.

Class 2.—Cases occurring in the sexual organs.

Class 3.—Cases occurring in all parts of the body except the above.

In the first class we have 71,559 cases, or 63.2 per cent. of the whole; in the second, 29,386, or 26.05 per cent.; in the third 11,856, or 10.52 per cent.

Before considering Class 1 it is convenient to consider classes 2 and 3.

Class 2: Cases occurring in Sexual Organs:—The 29,386 cases of this class are made up as follows:—

Uterus	15,659
Female Breast	11,364
Ovaries	1,254
Male Breast	83
Prostate	366
Testis and Penis	660
	—————
	29,386

Each of these organs is closely connected with an orifice of the body and is therefore liable to direct infection. Thus infection spreads to the uterus along the vagina; to the ovary via the vagina, uterus and the Fallopian tubes; to the breast along the milk ducts opening on the surface of the nipple; to the prostate, testis and penis via the urethra. We know that cancer of the cervix is most liable to occur in married women who have borne many children, especially in those cases where the cervix has been lacerated during child-birth and the wounds have never healed properly. The wounds become infected and remain chronically inflamed; the more often this damage occurs the more liable the part is to become the seat of cancer. Although this chronic irritation frequently commences while the woman is still young and the repeated damage occurs during the child-bearing period, the cancer does not as a rule develop until she is well over forty years of age. If the chronic infection of the torn cervix is the predisposing cause of the cancer which follows, it is clear that it takes many years for its development. The cause of cancer of the fundus uteri is not so clear, as it occurs more commonly in unmarried women, and I suggested that a possible explanation is that the uterine cells, not having been put to their normal physiological function, undergo degeneration, and so become liable to infection, via the blood-stream, from

some septic focus elsewhere, commonly the mouth. Or it seems possible that the infection may occur from the vagina, as a septic condition of the vaginal walls—as evidenced by leucorrhoea—is not uncommon in virgins.

With regard to cancer of the breast, this theory that a prolonged bacterial infection of low virulence plays an important part in the production of cancer is strongly supported by Mr. Sampson Handley, who states that "The most important fact is the production of breast cancer appears to be chronic mastitis". Writing on a prophylaxis of cancer, he says: "The importance of chronic irritation, especially bacterial irritation, emerges more and more. It is probable, in my opinion, that oral sepsis comes only second to syphilis and excessive smoking as a cause of mouth cancer, and in most cases of cancer of the tongue, carious teeth and pyorrhoea are prominent features, and as causing gastric ulcer, oral sepsis is a remote cause of gastric carcinoma. A national campaign against oral sepsis would probably lead to a diminution in the mortality of cancer."

The forty-seventh annual meeting of the American Dental Society of Europe will be held on 30th July, 31st July and 1st August, at the Residential Palace, 155, rue de la Loi, Brussels, Belgium, and not, as stated in previous notice, at the Palace Hotel.

—J. A. Holden, Hon. Sec.

**The Ontario Association will
Meet in Toronto June 4th to
8th, 1928.**

CORRESPONDENCE

Diet and Pyorrhoea

To the Editor of the "British Medical Journal."

Sir,—For the past few years I have been firmly convinced that diet is a most important factor in the causation of both dental caries and pyorrhoea, and have advised my patients accordingly, with varying results, depending on which the patients considered of greater value, "the pleasures of the table" or their teeth.

On January 20th, 1927, Mr. X was referred to me by his medical adviser, with the object of having several of his teeth extracted on account of pyorrhoea. He suffered from the typical so-called pyorrhoea, with marked gingivitis and pus exuding, on pressure, from several points; salivary calculus was present in abundance on the lingual surfaces of the lower incisors and on the buccal surfaces of the upper molar teeth, and halitosis was very marked. In the upper jaw were three teeth with ill fitting crowns. X-ray examination revealed general absorption of the alveolar margins, but no apical infection. I removed the gold crowns, reamed the pulp chambers, inserted creosote dressings, and sealed with temporary cement, being unwilling to proceed with the recrowning until I felt assured that the condition was responding satisfactorily to treatment. At the same time I performed thorough prophylaxis and instructed the patient in the proper care and hygiene of the mouth, including the use of a mouth wash composed of lemon juice and water.

I reported the results of my examination to his doctor, at the same time telling him that I thought it

would be possible to save all the teeth if the patient could be persuaded to adopt a diet I should schedule for him. The doctor readily agreed to this, and gave me whole-hearted support, which was of great assistance in tiding the patient over the difficult period that must elapse before any result could be seen or felt. The patient rather grudgingly agreed to give the treatment a trial for six months.

I prescribed a diet which contained a large proportion of fresh raw fruit and vegetables, and of which the salient features were three meals daily—one fresh fruit, one carbohydrate, and one protein. The fresh fruit was eaten, absolutely alone, for breakfast, the carbohydrate meal consisted of any kind of coarse grain—ed bread with plenty of butter, followed by a large raw vegetable salad, and the protein meal consisted of a small portion of meat (to be taken not oftener than twice a week) or eggs or fish or cheese or fowl, etc., always accompanied by two of the less starchy vegetables, properly (that is, conservatively) cooked, and followed, as in the carbohydrate meal, by a large raw vegetable salad. I also allowed him when he so desired to partake of a purely vegetable soup (neither bones nor meat of any kind to be used in its preparation), or stewed dried fruit. The carbohydrate and protein meals were to be taken, one at mid-day and the other in the evening, in whichever order the patient preferred. No condiments of any description were to be consumed.

The patient has reported at intervals since his first visit, and an im-

provement has always been manifest. On November 14th, 1927, examination of his mouth revealed teeth firmly implanted in sockets, absence of pus pockets, no halitosis, no salivary calculus, and only the slightest trace of gingivitis, which, I am confident, will disappear after a further period of treatment. The patient himself said that the rheumatism, from which he had long suffered, was quite gone and that constipation was much less marked. In appearance he looks much more virile, his skin is clean and healthy, and he declared, voluntarily, that his diet suited him admirably, and that he would never think of returning to the old regime.

This result confirms what Howe, McCollum, Simmonds, and others have been teaching—namely, that pyorrhoea is merely a symptom of a general poisoning of the body brought about by a wrong diet.—I am, etc.,

J. MENZIES CAMPBELL,
L.D.S., D.D.S., Toronto, F.R.S.Ed.

Dr. A. E. Webster,
c/o Dominion Dental Journal,
73 Richmond St. W.,
Toronto, Ontario.

Dear Doctor Webster:—

I notice the letter to you published in April Journal regarding the denture that became filled with saliva and was very easily dislodged.

Would it not be possible that a marginal retention denture would be the solution of this problem? The marginal technique causes a slight impingement around the entire periphery and this impingement not only retains the denture but would tend to keep out saliva.

I asked Dr. Barbour's opinion on this and he believes that the applica-

tion of this technique would overcome the difficulty.

Faithfully yours,
N. R. BARBOUR.

December 5, 1927

Dr. A. E. Webster,
Toronto, Ont.
Dear Doctor:

I enclose you two radiographs of Miss Fleming.

The physician claims that the pains in her head and the poor condition of her health are due to her three teeth, which are all she has left in her mouth.

She has felt indisposed on several occasions previously, and each time I would take out a tooth or more, she would feel better, but gradually sunk back into the old rut again.

She is loathe to lose these teeth, and so far as I can see these X-Rays through my radiograph lamp, they appear reasonably good. I have my suspicions though, concerning the left antrum. Her specialist examined her antrum comparatively recently, and he seems to think that there is no trouble there.

Will you kindly look these X-Rays over, and let me know what you think of the case? The right X-Ray got a little dark on us, but the patient has a lighter colored one, which I could get and send to you.

I thank you for your diagnosis enclosed in your letter, which I received on the 3rd inst.

Faternally yours,

(Editor). There is not the remotest chance that the injections have anything to do with the present condition.

Such cases make one think of hypochondrosis, or early symptoms of bulbar paralysis. However the family physician should be able to make such a diagnosis.

Ontario Dental Fees

Dr. A. E. Webster,
240 College Street,
Toronto, Ont.
Dear Doctor:

The beginning of the New Year brings to our attention the fact that we should pay our membership fee to the Ontario Dental Association. The majority of dentists belong to a number of clubs and societies, but there is no organization which makes such a strong appeal to our loyalty as our professional association. We are extremely anxious to see Dentistry occupy a high and useful place in the life of this Province and know that this can only come as the result of combined effort. The Ontario Dental Association represents the dentists of Ontario, supplies them through the Annual Convention with useful modern knowledge and carries on for

them an aggressive mouth health educational campaign.

To do our work effectively we must follow the example of the other professions and secure a large permanent membership. We can greatly assist our Association by paying the annual fee promptly. Please fill in the enclosed cheque form and send it to the Secretary. If you wish to become or remain a member of the Ontario Dental Association and the University Alumni Federation make the cheque for Eleven Dollars and Fifty Cents; if you wish to be a member of the Ontario Dental Association only the fee is Ten Dollars. We will be most grateful to receive your cheque as soon as possible.

Fred. J. Conboy,
Secretary-Treasurer,
The Ontario Dental Association.

Dr. A. E. Webster,
Toronto, Ont.
My dear Dr. Webster:

I have a patient nineteen years of age, who complains of her teeth being sore apparently all over the mouth, with an apparent loose feeling in the mornings.

At night after supper they appear tender at the gums, with a "drawing" feeling, as she says. Tender at the gingival upon pressure of the finger nail. Were tender to hot and cold, but not so since I have given them several treatments with silver nitrate application at the gingival margins. There appears to be no pain during mastication.

Her teeth have a large number of fillings, and I might say that practically no surface of the teeth is immuned. Her physician has prescribed Calcium A. After a course in that, he

took out her appendix. Now she is back to me.

What in your opinion is the cause, and what treatment would you prescribe?

Acidosis—diet.

Dear Doctor:

Married lady about 48 years of age. Over a year ago the remaining teeth in the upper and lower posteriors extracted, about six months later or longer a full upper and partial lower dentures made. Patient very well pleased, and says she has not a bit of trouble, but on examination six months later the upper anterior ridge is quite spongy, and as far back as the ridge extend it is quite soft and red in color. The posterior part of the ridges are quite firm and of a natural color. What should be done in this case in particular?

Hoping to have an early reply, and thanking you for same. I am,

Yours sincerely,

(Editor) It is unusual for so much absorption of the process and bone to occur in so short a time. The lower anterior teeth are biting heavily upon the uppers likely causing at first a slight gliding motion and now a marked movement with each closure. The pressure and motion together are causing the absorption. It may be necessary for stability of the denture to remove the loose gum tissue surgically. Rebase the upper denture, remake the lower so that the chief weight of occlusion will come on the posterior part of the ridges.

Toronto, Ont.

Dear Dr. Webster:

I have made several partial dentures for a patient of mine and he complains of a soreness and pressure that I cannot account for.

It is a lower denture and I finally had to cut the second molar off the plate, and now he is getting along very well. The patient is satisfied, but I would like to know the cause.

I took a picture of it, and I will enclose it with one that was taken before the tooth was extracted. I will appreciate it if you will give me your opinion as to what the cause is and also what you see in the picture.

Thanking you for your kindness and your valued opinion. I am,

There is not quite enough information to say positively what was the

matter, but since the X-ray pictures do not indicate anything pathological and the discomfort has subsided since the pressure has been relieved one would think that there had been excessive pressure upon the posterior portion of the denture.

GOOD TEETH

One of our foremost physicians says: "If expectant mothers received ample, well-balanced diets, in which green vegetables were abundantly supplied, and cow's milk was regularly taken, and if pregnant women spent more time in the open air, if babies were kept more constantly out of doors and placed in the direct rays of the sun for a good part of each day, and if they were given a sufficiency of milk and cod liver oil for the first two years of life, more could be accomplished in regard to the eradication of the decay of teeth than by all other treatments put together."—The Health Bulletin.

The dentists of St. John, N. B., have maintained a free dental clinic at the health centre for a number of years. At a recent meeting of the Women's Institute it was said that it was high time that the city should pay for the services rendered to the children who were unable to pay dental fees.

Hon. A. David, Provincial Secretary of Quebec, praised the Dental profession for its interest in Dental hygiene.

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Toxins and General Paralysis of the Insane

(Continued from January)

As an excellent example of these microbial toxins, let us take general paralysis of the insane, a disease which is the result of syphilis.

Noguchi has demonstrated the presence of spirochaetes in the cerebral cortex of patients who have died from it. The late Dr. Mercier in his brilliant description of this disease says:

"General paralysis of the insane may begin quite suddenly, with a fit, or with an outbreak of acute insanity of which no warning has been given; but usually, after the disease has declared itself, it is remembered that for days, weeks, or perhaps even months, the patient has been failing in certain assignable ways. The most frequent of the early changes is a degradation of the moral tone of the individual. His character changes. Always a busy energetic man, prone to take risks, to keep late hours, to live freely—all these characteristics become accentuated. His energy becomes overpowering; he undertakes more than he can get through. His affairs become more and more entangled. He speculates more rashly. He goes about more; he takes long journeys upon slight inducement; he drinks more, he is less particular about his associates and companions; he goes among loose women; he talks too much; he chatters among strangers about his private affairs; he becomes effusive; he gives presents without justification; he brags; he is like a man always under the influence of drink and, as he does drink a good deal, his peculiarities are attributed to drink alone." Later, on the intellectual side, "he becomes stupid; he cannot concentrate his attention; he is confused in his mind,

and it is apparent that he is less capable in business and less able to transact all affairs of life than he was."

Certain pupillary changes occur; there is sluggishness, or absence of the reflex on both sides. This is one of the cardinal signs of the disease. His speech becomes defective—it is like that of a drunken man—it is thick, the words are clipped and run together. He often speaks with extraordinary deliberation. If he speaks at all quickly the words are slurred together and syllables omitted.

"The disease almost invariably progresses; he reaches a state of exaggerated exaltation; he owns millions and millions; he is thousands of years old; he has hundreds of wives and thousands of children; he has such titles as were never heard of. He is the greatest adventurer, artist, poet, warrior, statesman, pitch-and-toss player the world has ever seen. He is lavishly benevolent, he will give cheques for millions written on dirty bits of newspapers, to bystanders. He talks incessantly save when he is writing, and he writes incessantly save when he is talking. He corresponds—still on margins of newspapers or dirty scraps picked up in the road—with all the crowned heads of Europe and all the celebrated people he can think of. His writing is characteristic. It is sprawly and shaky; it is unrecognisable as his ordinary handwriting. He omits letters; he fails to finish his words; he omits syllables and often whole words. He runs his words together in writing just as he does in speech, and often he repeats the same words twice or oftener.

"In this stage he sleeps little, he is up early and late, he is full of



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eager, busy, futile activity. In whatever is going on he must take part, and principal part. If anything is being discussed, he lays down the law; if anything is being done, he takes the command. He appropriates anything he has a mind to, and when his pockets are turned out they are found to contain as miscellaneous collection as a magpie's nest—other people's pipes, handkerchiefs, and pencils, one or two playing cards, bits of string, bits of bread, sticks, stones, dead leaves and bits of paper innumerable.

"At the same time, with all his grandeur and majesty, he is singularly weak of will and easily influenced. In his own house he is obedient to his own servants, if they are at once authoritative and judicious. He does what he is told. He is full of preposterous schemes, but he is diverted from their pursuit with the utmost ease; and if left alone, he does not pursue any of them for more than a few moments together. He is subject to outbursts of temper, rising often to fury, but they are short-lived

and easy to control. Sent to an asylum, he accepts the situation without a murmur and without question. He does not resent his removal from home; he sees nothing worthy of protest or remark in the control to which he is subjected.

"In this excited and grandiose condition he remains for a few months becoming gradually calmer and more demented until, at the end of a variable time—usually about a year after the onset of the disease—he has a fit."

These symptoms become steadily worse until, in the course of two or three years, they determine in death from exhaustion.

This description of a general paralytic shows what a profound alteration can take place in normal conduct as the result of a microbial toxin acting upon the central nervous system.

Toxins absorbed from the alimentary canal are also liable to produce profound mental symptoms.

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Clinic on Practical Denture

Due to the courtesy of Toronto University, Dr. W. G. Switzer of the Dental faculty put on a two-day clinic on practical denture construction in Edmonton April 30th and May 1st, a patient, who had presented difficulties in fitting dentures, was on hand and before an interested class, Dr. Switzer carried cases through to completion. The results were a relief to the dentist and a satisfaction to the patient, as well as the Edmonton men who attended. Many out of town practitioners took two days off to attend the demonstrations. Among those noted were Dr. J. A. Burstein, of Smoky Lake; B. N. Shlain, Mundare; E. J. Sheahan, St. Paul de Metis; H. J. Clark, Vermilion; H. O. Caniff, Provost; F. E. Dodds, Red Deer; H. J.

Hoare, Wetaskewin; J. H. Moore, Lacombe; W. A. Shea, Camrose; G. R. Murray, Sedgwick; W. C. McClurg, To-field; H. B. Ness, Camrose; J. C. Ward, Leduc; G. D. Sutherland, Drumheller; G. G. Barnett, Killam; L. H. Wright, Stettler.

At the termination of the clinic, a dinner was held in the Macdonald Hotel and a presentation made to Dr. Switzer in appreciation of his excellent, painstaking demonstration. A resolution was passed thanking Toronto University for sending out its men over a trans-Canada route, bringing good dentists to so many places. The difficulties of such an undertaking in a scattered country such as ours have to be known to be appreciated.

OBITUARY

DR. W. C. BROWN

The town of Prescott has sustained a distinct loss in the death of Dr. W. C. Brown, collector of national revenue, at the port of Prescott, which occurred on Sunday, April 8, at the Hepburn hospital, Ogdensburg, N.Y., after an illness of ten weeks. The late William Charles Brown was born in South Gower, in 1869, a son of the late Mr. and Mrs. John S. Brown. He came to Prescott 33 years ago, where he practiced dentistry up to the time he was appointed collector of customs at this port in 1910. He was one of the town's most prominent and highly esteemed citizens and was deeply interested in its welfare. He was a member of St. Paul's United church and in

politics, a staunch Liberal. Widely known in fraternal circles, he was a member of Central Lodge No. 110 A. F. and A. M., Amity Lodge No. 80 I. O. O. F., and the Royal Arcanum. In 1900 he was married to Mary Kate Plumb, daughter of the late Capt. Isaac Plumb, who survives with three children, Elva Mary, Helen and Charles Lindsay, all of Prescott, one sister, Mrs. Rev. S. A. Woods, of Markham, Ont., and one brother Lindsay O. Brown, Britannia Heights, Ottawa. The funeral was held under Masonic auspices at St. Paul's United church, Prescott, Tuesday, April 10. Burial at Sandy Hill cemetery. Graduate of R. C. D. S., 1895.

DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

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Editor, A. E. WEBSTER, D.D.S., M.D.S., M.D.

Honorary Dean Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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Dominion Dental Journal

Vol. XL

TORONTO, JUNE, 1928

No. 6

ORIGINAL COMMUNICATIONS

Some Phases in the Development of the Inlay System

T. C. TRIGGER, ST. THOMAS, ONT.

The process of constructing fillings made of PURE GOLD by the wax dispersion method was made known to the dental profession in 1907, and since that time this means of filling teeth has been much used and universally accepted as a great addition to the various filling materials, in use for the preservation and restoration of carious teeth.

We have had frequent instances where new adaptations for old processes have been introduced, but notwithstanding this fact the basic principles which have been advocated have not been changed in the casting process.

The process of construction inlays by the wax dispersion method has greatly simplified the technique of their construction, while heretofore, it required considerable instrumentation in the adaptation of the matrix, either by the direct method, that is by swaging a matrix made of pure gold or platinum into the cavity, and burnishing it accurately over the marginal

edges, or in the construction of dies formed by taking an impression of the cavity and then forming the matrix by the means of swaging or burnishing to the cavity.

For this reason the dentists were slow to accept and use this means of filling teeth, and only a few who had become familiarly expert with this method were using it for filling teeth.

I think about the first intimation we had of the inlaying process, was the introduction of what is known as metallic facings, which were adapted for the purpose of protecting fillings made of *gutta-percha* cements from wearing away by attrition or by chemical abrasion—thus making them more durable.

Dr. Bing was the first to introduce metallic facings. His method was to use a plate of pure gold or an adaptable thickness formed approximately to the size of the external margins of the cavity. To the under surface were attached loops or pins to form a security to the plate of gold when

forced into the filling used. The edges of the facing being burnished over the cavity margins.

At a later date this plan of filling teeth was considerably modified by Prof. Charles J. Essig and described in an article, appearing in the *COSMOS* in 1877, and by Dr. Wilber F. Litch in the subject of "Metallic Facings for Carious Crowns" appearing in the *American System of Dentistry*, a year later says: "In the simple forms of cavities this plan is a good one, but in many compound cavities it is quite difficult, if not altogether impossible to secure an accurate impression of all the margins; and without absolute accuracy the impression is worthless. Indeed, in many cases the taking of an impression, making casts, dies, and counter-dies, unnecessarily complicates the making of metallic facings.

"Realizing their great value as a protection to plastic stoppings in very frail and badly-decayed molar and bicuspid teeth, the writer had endeavored to secure precise and simple processes for their preparation, so that they may be made and secured in position in less time and with less labor than is required for the introduction of the average gold-stopping in the same class of cavities."

It was by this means of using metallic facings that eventually induced me to make use of the idea of constructing, which I termed the "Hollow" and the "Shell" inlays. In making the latter type a "core" is formed into the base of the cavity, thereby obviating the necessity of the inlay extending to the full depth of the cavity, thus allowing for pin and loop attachment, for security, to the inlay (after removal of the core) in the final setting of the inlay.

It was in the year 1905 that Dr. Hollingsworth of Kansas City demonstrated to me his Crown and Bridge system and how to cast a solid gold cusp. He selected a desired cusp form, instead of making a mold in fusible

metal. A piece of asbestos board was selected one-quarter of an inch thick and about an inch in size. The asbestos block was made moist so as to become sufficiently softened, then with a hammer drive the cusp form into it, on a level with the cusp button; then remove the cusp form and an excellent reproduction of the form required is obtained. Then the asbestos is allowed to dry to expel all moisture. The cusp depression is filled with scrap gold. Heat is applied by directing the blow-pipe flame so as to melt the gold into a molten mass. The end of a carbon rod is held on an incline against the surface. The carbon stick held in this manner will allow for retention of the heat in the process of melting the gold, then as soon as the gold becomes sufficiently heated in a molten mass the carbon stick is quickly tilted over the surface of the cusp, thus forcing the gold completely over its surface and completely filling the cusp. No flux should be used in working with asbestos. This way of casting cusps can be made much quicker than by casting with the wax dispersion method, with equally as good results.

The preparation of cavities for the reception of inlays must be accurately and scientifically carried out, so that the inlay will rest securely in the cavity and also on the marginal edges; the inlay must so fit to perfectly seal the cavity to preclude moisture. So likewise in the insertion of cohesive gold fillings accuracy in the preparation of the cavity and marginal edges should be made, and also a thorough condensation of the particles of gold against the cavity walls to obtain a perfectly sealed cavity. No inlay should be permanently sealed in the cavity, if the operator is conscious of a material defect, for sooner or later the filling will show evidence of grave unpardonable neglect.

The nearest conception of the cast dispersion method in the use of pure-gold was adapted by Dr. Charles Alex-

ander in which sponge gold was sufficiently packed into the cavity, and well over the marginal edges to form the contour, and covered well over the marginal edges in order to get an accurate imprint of the cavity to be inlaid. The sponge gold in this form is invested in sump, and on its upper surface a sprue opening is made with a slight depression to hold the solder in place when casting. The investment was placed on a soldering gauze, heat being applied beneath, the blow-pipe flame at the same time applied directly on the 22k solder, until the temperature of the molten sponge gold is sufficiently raised to absorb the pieces of solder, thus completing the casting of the filling.

In 1887 Dr. C. H. Land, Detroit, made possible the restoration of teeth by means of porcelain the use of a metal matrix in making an inlay. For this purpose he used gold and platinum, but found the platinum was more preferable, when using high fusing bodies.

It was through the efforts of Dr. Land in developing the porcelain inlay that gave me an incentive, a few years later to make use of the knowledge I had obtained in the practical making of porcelain inlays, and its application to crown, bridge and denture construction, which inspired me to use those principles in the development and practical application of the gold inlay system.

When I was an indentured student with Dr. E. A. Teskey, I received considerable practical experience in making porcelain restorations, such as the making of inlays, crown and also all porcelain dentures.

Dr. Teskey was the first dentist in Canada to make use of Land's system of porcelain restorations, and also, at that time I received some personal instructions from Dr. Land in this particular line of study.

The more recent development of the gold inlay system has given a renewed impetus in porcelain work, which is

due no doubt, to the universal adaptation of the more recent improvement of the gold inlay system.

Prior to 1887 gold inlays were not known in dentistry, excepting those made from such material as porcelain rods, glass, precious stones, etc., formed to the shape of the cavity or driven therein to form a solid plug. It was however, about seven years after Land made known his method of filling teeth with porcelain, that active steps were taken to develop the gold inlay system.

Before 1885 efforts were directed to the perfection of porcelain as a material in making artificial teeth for use in dentures.

There has been very little change in the technique of construction of the cast gold inlay, and its application to crown, bridge and denture work, since it was first introduced in dentistry.

A brief description of the technique in making cast gold inlays, by the wax dispersion method is as follows:—

An accurate impression is taken of the cavity, then a sprue wire is attached to the outer surface of the wax, a suitable flask is used to hold the investment, then the wax impression is immersed therein, and after the investment becomes thoroughly set, the sprue wire and crucible form is removed. Then the wax form is expelled from the mould by the application of intense heat. Finally the flask is placed in the casting machine, heat is applied to the button of gold to obtain a thoroughly molten mass; pressure is then applied to drive the gold to all parts of the mould, thus completing the casting of the inlay.

It is now over 21 years since the introduction of the cast inlay process, in which pure gold was used for the first time in the making of such fillings; since that date gold inlays have been used very extensively, and are now generally accepted, as one of our best filling materials.

(Continued on page 191)

A Bill to Provide a Board to Deal with the Discipline of Professions

A unique and interesting piece of legislation has been passed recently by the Government of the Province of Alberta affecting the Dental as well as the rest of the professions in that province. This piece of legislation, passed by a farmers' government, reflects the prevalent idea that the professions are close corporations, meeting out discipline in their own way to those specially selected for action. There has been a feeling in Alberta that flagrant cases of professional misconduct against the general public have been ignored entirely, while misconduct against the members of the same professions have been severely dealt with.

The Act provides for a lay board to supplement the disciplinary boards now in existence and to whom either parties, the board or the one being disciplined, may appeal.

The title page of the bill carries the following preamble:

BILL NO. 31 OF 1928

A Bill to Provide a Board to Deal with the Discipline of Professions.

NOTE.

This bill provides for the appointment of a Professional Discipline Board:

- (a) with disciplinary powers over any profession or calling, which has no disciplinary powers of its own;
- (b) with disciplinary powers after reference to the governing body of any profession or calling which has disciplinary powers of its own.

The Bill further permits of an appeal to the Board by any person who has been disciplined by his own profession or calling, for conduct which involves no moral turpitude.

In cases where the governing body of the profession or calling does not duly investigate, or its disciplinary powers are inadequate, or exercises disciplinary powers too leniently, the

Board has power of its own motion, to step in and punish the persons whose conduct is complained of. The Board is given very complete powers as to the compelling of persons to give evidence before it and to make rules as to its own procedure.

The Bill further provides that from any decision of the Board there shall be no appeal. (This clause was later struck out).

The Bill does not operate with respect to any profession or calling until the act governing it is placed on the schedule to the Bill by the Lieutenant-Governor in Council.

(Signed) WALTER S. SCOTT,
Legislative Council.

Quoting from the Edmonton Journal of March 23rd, 1928:

"Introducing the bill the Hon. Geo. Hoadley stated that the object was to deal with disciplining of members of professions who had not lived up to the best traditions of their professions. He declared there was a widespread feeling throughout the Province that an independent board of this kind should be set up. In every case, however, the profession involved would be given the first opportunity to discipline. The medical and legal professions would have jurisdiction as wide as the jurisdiction of the board under the bill before the house. The professions themselves had requested these powers. The disciplinary board would also stand between a member of the profession in the event of the disciplinary board of one of the professions inflicting a punishment that was too drastic.

In attacking the bill, Capt. J. T. Shaw, Liberal Leader, said:

This is the most unjust, harsh, unnecessary and un-British proposal that has ever been proposed in this legislature.

Captain Shaw said that it was becoming altogether common a sport, to

use for political purposes shafts directed at the medical and legal professions. Quoting Captain Shaw:

The Board which it is proposed to set up under this bill and which will exercise disciplinary power over all the professions is entirely a political board appointed by the Government.

"I suppose it will be composed of farmers," he added sarcastically, "and it will be interesting to see how the powers granted under the bill will be applied."

A. A. McGillivray, Conservative Leader, declaimed: "If you approve this bill tonight, you will do what is the most intricate and arrogant thing that one class has ever done to another in the history of legislation. It is an insult to an ancient and honorable profession.

"A government that came into power as a class group should be fair to other classes and not attempt to be arrogant", declared Mr. McGillivray.

He went on to say that in recent years it had become a custom to seek to bedevil the professions, but he would inform the house that professional men are not so much exercised over the question of dollars and cents as might be thought, and that there was decency and honor in the professions.

Attacking the proposal to set up an independent board, Mr. McGillivray charged that power to say what is "Unprofessional conduct" is being given to strangers to the professions. There should be no special privileges or special way of dealing with doctors, lawyers and dentists under the criminal law and the Attorney-General, if he does his duty, should prosecute every member of the professions who breaks the law as he would a cattle thief or any other law breaker.

"Why set up a board to say what is ethical or moral conduct in the professional world?" asked Mr. McGillivray. "If this is done, why not also in the mercantile world? Among farmers, or in any other calling?"

Premier Brownlee Resents Charges,

Premier Brownlee was equally vigorous in his defense of the measure, and strongly resented the charge that the Government had been guilty of introducing class legislation. In all of his discussions with representatives of the professions, he had not found any of the anxiety that had been expressed by the opposition leaders. The whole point of the bill was to create a body which would have some power to review actions taken by the disciplinary board of the profession itself.

"I wish to emphasize," said the Premier, "that in the acts which deal with the professions, it has been an established precedent and a recognized fact that there should be some governing body."

"What is the effect of this bill? Do we attempt to override or disregard the professions?" asked Premier Brownlee, and answering his question, he continued, "it was not so claimed by representatives who came before us. The governing body of the profession is the one that will sit on its own case and make its finding, and only in rare cases will it be reviewed, and a separate investigation made. On this board there will be the lay mind, as well as the professional mind, and this is something that is being agitated strongly in England to-day." In closing, the Premier said he wished to emphasize that in acts dealing with the professions, it had been an established precedent that there must be some governing body. There had been some resentment throughout the province that some of the governing bodies had not been as active as they should have been. The Premier denied that the board would be a political body, but would be composed of men of high standing, who would be readily accepted. He thought that the reaction to the bill and the fears expressed had been mainly psychological and that the wisdom of it would be apparent after it had been in operation for a year or two.

The Constitution of the Canadian Dental Association

ARTICLE 1.

This organization shall be known as the Canadian Dental Association.

ARTICLE 2

The particular objects of this association shall be:

(a) To cultivate and promote the art and science of Dentistry and all its collateral branches.

(b) To conduct, direct, encourage, support or provide for exhaustive dental and oral research.

(c) To elevate and sustain the professional character and education of dentists.

(d) To promote mutual improvement, social intercourse and goodwill among members of the profession.

(e) To disseminate knowledge of dentistry and dental discoveries.

(f) To enlighten and direct public opinion in relation to oral hygiene, dental prophylaxis and advanced scientific dental service.

(g) To have cognizance of and safeguard the common interests of the members of the dental profession.

(h) To have power to acquire property for the purposes of the corporation by purchase, deed, gift, bequest or otherwise, and to hold or administer the same.

(i) To publish dental journals, reports and treatises.

(j) To employ such other lawful means as are conducive to the attainment of the above objects.

ARTICLE 3

The code of ethics of the Association shall be such as may be adopted by the Association from time to time. An efficient copy shall be kept in the possession of the secretary, and shall be open to inspection at all times.

ARTICLE 4.

The Association shall be composed of active, honorary and associate members.

ARTICLE 5.

Affiliated Societies.

Any nationally organized dental, medical, scientific or sociological body, may become affiliated with the Canadian Dental Association by securing the approval of the Board of Delegates. They shall submit a copy of their Constitution and By-laws and

such amendments as may be made from time to time.

ARTICLE 6.

Meetings of the Association.

The meetings of the Association shall be held at such time and place as shall be determined by the Board of Delegates.

ARTICLE 7.

Officers.

The Officers of the Association shall be a President, a President-elect, a Vice-President for each Province, a General Secretary and a Treasurer; if deemed expedient the Board of Delegates may elect from its members a chairman of the board of delegates other than the President; the General Secretary and Treasurer may be the same person. The General Secretary and Treasurer may be appointed from among the members of the Association. The President and President-elect shall be elected from among the members of the Association.

ARTICLE 8.

Board of Delegates.

Each province shall be entitled to elect or appoint one delegate to the Board of Delegates, excepting the provinces of Ontario and Quebec, which shall each be entitled to elect or appoint two delegates, one senior and one junior. The senior delegate shall be the Vice-President of the Canadian Dental Association for that province. That payment will be made of expense account on a mileage basis in part or in whole of one delegate only from each province as the funds of the Association will permit. When the President, President-elect are not duly authorized delegates, their expenses will be paid on the above basis.

The Board of Delegates shall consist of:

(a) The officers.

(b) The junior delegate from each of the two Provinces, Ontario and Quebec.

ARTICLE 9.

Committees.

The Committees shall be:

(a) Standing.

(b) Special.

(c) Reference.

ARTICLE 10.

Funds.

Funds for the purposes of the Association shall be raised by an annual fee from each active member, the amount of such fee to be determined by the Board of Delegates, and in any other manner approved by the Board of Delegates.

ARTICLE 11.

The Association Year.

The fiscal year of the Association shall be the calendar year.

ARTICLE 12.

Amendments.

No amendment to any of the foregoing articles or sections thereof shall be made, unless due notice has been given in writing to the General Secretary at least six months before the meeting at which they are to be discussed.

Any such notice or motion must be forwarded by that officer to members of the Board of Delegates and the Secretaries of the Official Provincial Organization and also published in at least two Canadian Dental Journals chosen by the Executive Committee. No amendment shall become effective until sanctioned by a three-fourths vote of the Board present and voting, and ratified by the Association in open meeting.

PROPOSED BY-LAWS OF THE CANADIAN DENTAL ASSOCIATION.

CHAPTER 1.

*Membership.**Section 1—*

ACTIVE

Active Members—Any ethical dentist residing in Canada may become an active member of the Canadian Dental Association, providing:

That he subscribes to the Constitution, By-laws and Code of Ethics of the Canadian Dental Association and pays the annual fee.

Sub-Section 1—

Senior members shall be active members who having attained the age of seventy years may be elected such by the unanimous vote of the Board of Delegates present and voting. They shall enjoy all the rights and privileges of the Association but shall not be required to pay any annual fee.

Section 2—

Associate Members—Associate members must be regularly qualified ethical Dentists not resident in Canada or scientific men of good standing whether or not Canadian citizens.

Section 3—

Honorary Members—Honorary members shall be persons who have distinguished themselves and risen to pre-eminence in dentistry, the allied sciences, literature or statesmanship. They may be nominated by any member of the Association and shall be elected only by the unanimous vote of the Board of Delegates present and voting. Not more than five honorary members may be elected in any one year, and at no time shall the list of living honorary members exceed twenty-five.

Section 4—

Associate and Honorary Members shall have all the rights and privileges of the Association except the exercise of the franchise and eligibility to serve as officers or members of committees. They shall not be subject to the payment of the membership fee.

Section 5—

The membership fee shall be payable on January 1st of each year. This fee may be collected from the voluntary or legal organization in the various provinces. The annual fee shall be 50 cents.

Section 6—

If by March 31st, the annual fee for the current year has not been paid, membership automatically lapses. Reinstatement at any time during the current year may be obtained by the payment of the current fee.

Section 7—

No member shall take part in the proceedings of the Association, nor in the proceedings of any section thereof, until he has properly registered and paid his annual dues where such are required.

Section 8—

Membership in all classes may be declared forfeited by the Board of Delegates for reasons considered sufficient by that body.

CHAPTER 2.

*Guests and Visitors.**Section 1—*

Dental practitioners residing outside of Canada in good standing in their national organization and other men of science may attend the convention as guests of the President or of the Board of Delegates, or as visitors when vouched for by the General Secretary. They shall register with the General Secretary without payment of fee, and may after proper introduction, and on invitation from the chair, be allowed to participate in the discussions of a purely scientific nature.

Section 2—

Lay members of affiliated associations or societies may upon invitation of the President and Chairman of the Programme Committee, attend conventions and participate in the discussions of a purely scientific nature.

Section 3—

Dental students who are eligible to attend their provincial society, may be admitted as visitors to either the general meetings or to the meetings of any of the sections thereof, and on the same terms as to their provincial society, but shall not be allowed to take part in any of the proceedings. They shall be vouched for by a member of the Association to either the President or the General Secretary.

CHAPTER 3.*Meetings of the Association.**Section 1—*

The time and place of Convention shall be decided upon by the Board of Delegates and shall be announced as early as possible.

Section 2—

The Convention meetings shall consist of general sessions and scientific sections.

Section 3—

The President shall preside at all general meetings of the Convention. In the event of his death, resignation, absence or upon his request one of the vice-presidents shall preside.

Section 4—

The Rules of Order which govern the proceedings of the House of Commons of Canada shall be the guide for conducting all meetings of the Association.

CHAPTER 4.*Sessions.*

Sessions to be held at any convention shall be determined by the Board of Delegates.

CHAPTER 5.*Election of officers.**Section 1—*

The President-elect shall be elected by the Board of Delegates as follows:

(1) In a secret ballot each delegate shall have the right to submit one name. This first ballot shall constitute the nomination but in the event of any nominee receiving a majority of the votes cast he shall be declared elected.

(2) If no election takes place a second ballot of all the nominees shall be taken.

(3) This last procedure shall be repeated at a third ballot if no election takes place.

(4) After the third ballot, the nominee having the least number of votes shall be dropped.

(5) In the event of a tie vote for low nominee a ballot shall be taken to determine the low man.

Officers of the Association, not otherwise provided for, shall be appointed by the Board of Delegates.

Section 2—

In case of a vacancy occurring in any office other than that of Vice-President, such vacancy shall be filled by the Executive Committee, such person to serve until his successor is elected or appointed at the first meeting thereafter of the Board of Delegates.

CHAPTER 6.*Duties of Officers.**Section 1—*

The President shall preside at the general sessions of the Association and shall perform such duties as custom and parliamentary usage require. He shall deliver a Presidential address. He shall be a member ex-officio of all committees.

Section 2—

The Vice-President for the Province in which the Convention is held, shall be the first Vice-President of the Association for that year, and shall assist the President in the performance of his duties.

Section 3—

The Chairman of the Board of Delegates shall be the executive officer of the Association. He shall preside at all meetings of the Board of Delegates and the Executive Committee.

Section 4—

The Treasurer shall receive and collect from the members the annual fee and demands of the Association. He shall be the custodian of all monies, securities and deeds, the property of the Association. He shall pay by cheque only, such cheques to be countersigned by the chairman of the Board of Delegates, and covered by voucher. His accounts and books shall at all times be open to inspection by the Board of Delegates and any authorized auditors. He shall prepare an annual financial statement audited by a Chartered Accountant. He shall furnish suitable bond for the faithful discharge of his duties, the cost of which shall be borne by the Association. He shall receive for his services an honorarium to be determined by the Board of Delegates. He shall be reimbursed for his legitimate

travelling expenses incurred in attending the meeting.

Section 5—

The General Secretary shall also be the Secretary of the Board of Delegates, and of its Executive Committee. He shall give notice of the time and place of all meetings by publication in the official journals of the Association, or if necessary by notice to each member. The Secretary shall communicate with the Legal Organization in each province requesting it to appoint its representatives to the Board of Delegates of the Canadian Dental Association or to request their provincial-wide voluntary organization to make the required appointments. He shall keep the minutes of the meetings of the Association, the Board of Delegates and the Executive Committee in separate books. He shall notify the officers and members of the committee of their appointment and of their duties in connection therewith. He shall conduct all correspondence of the Association, Board of Delegates and its Executive Committee, and shall publish the official programme of each Convention. He shall preserve and index the archives, the public transactions, essays, papers and addresses of the Association, and shall perform such other duties as may be required of him by the President, the Board of Delegates or its Executive Committee. He shall deliver to his successor in office all books, papers, records, etc., in his hands belonging to the Association, Board of Delegates or any of its Committees.

CHAPTER 7.

The Board of Delegates.

Section 1—

Appointment of Delegates.

(a) In those Provinces which have a voluntary province-wide organization the delegate or delegates may be appointed by this voluntary organization.

(b) In those provinces where there is no province-wide voluntary organization, the delegates shall be appointed by the Provincial Legal Association, unless this power be delegated by the Provincial Association to some other body.

(c) Before anyone can take a seat on the Board of Delegates he shall present credentials proving his election or appointment. The credentials shall be signed by the Secretary of the Organization appointing the delegate and shall state the period of time he is to represent the said organization.

Section 2—

The Board of Delegates shall meet at least one day immediately prior to the opening of the Convention, and thereafter while the Association is in session the Board of Delegates may meet daily. During the interval between conventions, the Board of Delegates shall meet at the call of the Executive Committee. In case such meeting shall be called, payment will be made of expense account on a mileage basis as provided in Article 6 of the Constitution.

Section 3—

For all the meetings of the Board of Delegates, due notice shall be sent to each member, stating the business of the meeting.

Section 4—

The Board of Delegates shall have supervision of all properties and all financial affairs of the Association. It shall through its officers conduct all the business and correspondence. It shall keep a record of the transactions of all its meetings and of the receipts and expenditures of all funds and shall report upon the same at the close of the financial year, in at least two Canadian Dental Journals chosen by the Board. A majority of the Board of Delegates will constitute a quorum.

Section 5—

The authorized provincial delegates shall be the only members of the Board of Delegates to have a vote except that in case of a tie the Chairman shall have a casting vote. The President, President-elect and Secretary-treasurer shall have the privilege of the floor.

Section 6—

In order that the business of the Association may be facilitated during the interval between conventions. The Board of Delegates shall appoint a committee of five from among its members which shall be known as the Executive Committee, and the Chairman of the Board of Delegates shall be its Chairman. When the Board of Delegates is not in session and has not given specific directions, the Executive Committee shall have general control and administration of affairs of the Association of a routine or ordinary nature, and shall have such additional authority as shall from time to time be delegated to it by the Board of Delegates. No report from this Committee shall be necessary, other than the record of its proceedings by the General Secretary to the next meeting of the Board of Dele-

gates. All matters other than those of a routine or ordinary nature, shall be referred to the Board of Delegates for a mail ballot. Three members of the Executive Committee shall constitute a quorum.

Section 7—

The order of business for the Board of Delegates, unless changed by consent shall be as follows:

- (1) Calling the meeting to order by the Chairman.
- (2) Reading the minutes of the previous meeting.
- (3) Reports of Officers.
- (4) Reports of Committees.
- (5) Unfinished Business.
- (6) General Business.

CHAPTER 8 Committees.

Section 1—

All Committees, the appointment of which is not otherwise provided for, shall be appointed by the Board of Delegates and consist of not more than five members, and shall report to the Board of Delegates when required. Any member of the Association shall be eligible to serve on standing and special committees. Reference Committees shall be appointed from the Board of Delegates.

Section 2—

(a) Standing Committees. The Standing Committee shall be as follows:

- (1) A Committee on Arrangements.
- (2) A Committee on Dental Legislation.
- (3) A Committee on Dental Health.
- (4) A Committee on Research.
- (5) A Committee on Inter-Provincial and Foreign Relations.
- (6) A Committee on Programme.
- (7) A Committee on Dental Education.

The Committee on Arrangements shall consist of five members, who shall be residents of the place in which the Convention is to be held. The President shall select two, who shall select the other three. The Committee shall elect its own Chairman. The Vice-President for the Province in which the Convention is to be held shall be an ex-officio member of this Committee. The Committee shall be required to provide for transportation and necessary accommodations for the Convention. The General Secretary shall act in an advisory capacity to the Committee, and it shall have power to add to its numbers.

Committee on Legislation — To the Committee on Legislation shall be re-

ferred all matters pertaining to legal and federal Dental Acts.

Committee on Dental Health — It shall be the duty of this Committee to act for the Canadian Dental Association on all matters of Federal and Dental Health to place itself in communication with the Federal Department of Health, and with all other organizations or individuals they deem desirable. They shall present a report embodying therein any information they consider advisable together with any necessary recommendations.

Committee on Research—The Committee on Research shall act for the Canadian Dental Association with regard to all research work under the general direction of the Board of Delegates and shall report to the Board of Delegates when required. The Committee shall have power to add to its numbers and to name its own executive.

Committee on Inter-Provincial and Foreign Relations—It shall be the duty of this Committee to endeavor to promote in the various Provinces of the Dominion a better understanding of the other's problems, thus making for a greater bond of sympathy and spirit of co-operation among the members of the Profession throughout the Dominion. To it shall be referred all matters pertaining to dental relations with foreign countries.

Committee on Programme—It shall be the duty of the Committee on Programme to secure speakers, essayists, clinics, and exhibits for the Convention, and report from time to time to the General Secretary, who shall have the programme arranged, published and distributed to the Profession. It shall have power to add to its numbers.

Committee on Dental Education—To the Committee on Dental Education shall be referred all matters pertaining to Dental Colleges and Dental Education.

(b) Special Committees — Special Committees may, from time to time, be appointed by the President, the Board of Delegates, or by the Executive Committee. They shall elect their own Chairman, and shall perform the duties for which they are called into existence.

(c) Reference Committees — The Board of Delegates shall at its first meeting appoint all the reference committees and name the chairman thereof. Reference Committees shall be as follows:

(1) A Committee on Reports of Officers.

(2) A Committee on Credentials.

(3) A Committee on Necrology.

Committee on Reports of Officers — To this Committee shall be referred the President's address, the report of the General Secretary and the report of the Treasurer, before their submission to the Board of Delegates.

Committee on Credentials—To this Committee shall be referred all questions regarding the registration and

credentials of members of the Association, before submission to the Board of Delegates.

Committee on Necrology — To the Committee on Necrology shall be assigned the duty of collecting as far as possible, the obituaries of members who have died since the last Convention. These shall be duly filed by the General Secretary. The Committee shall report, on the call of the president, at the last general session of each Convention.

Discover Where There Will be Cavities

Chicago, May 5.—(Science Service). —Teeth, shining like jewels in the dark under the invisible rays of ultra-violet light, reveal by dark spots the places where cavities are beginning to develop, before they become visible to ordinary inspection. If the technique of this kind of examination can be sufficiently perfected, we may expect dentists' offices to be equipped with the latest types of ultra-violet lamps, to enable up-to-date practitioners to catch cavities before they happen, and so perhaps prevent them.

This possibility is an outgrowth of experiments by Dr. H. C. Benedict of Northwestern-university dental school, on the fluorescence of teeth under ultra-violet radiation. Like many other substances, human teeth react to these

invisible rays by shining brightly with a visible light. This phenomenon is known as fluorescence.

The white spot that marks the beginning of cavity-forming troubles, Dr. Benedict found, does not fluoresce even though no coloring matter has begun to form on it. This seems to be associated with the removal of a thin protective film, for it was found that a similar effect could be obtained by treating a paraffin-coated tooth with acid. Wherever the paraffin had been scratched through, the tooth failed to fluoresce.

Dentine, which forms the foundation substance of teeth, fluoresces more brightly and with a bluer light than does the hard outer coating of enamel.

SOME PHASES IN THE DEVELOPMENT OF THE INLAY SYSTEM

(Continued from page 183)

I have been making gold inlays from the earliest inception up to the present time, and find that inlays con-

structed by the matrix method show, far as stability, equally as good, as the cast inlays.

It is gratifying to see such excellent and beautiful gold inlay restorations made by many operators of to-day.

Report of the Saskatchewan Mouth Health Campaign, 1928

The Canadian Dental Hygiene Council has a feeling of pride and gratification in the publication of this report of the recent mouth-health campaign in the Province of Saskatchewan. The executive and our field officer devoted a great deal of time and thought in the preparation of plans which we thought should insure the success of this undertaking. The wonderful co-operation which Dr. Harry Thomson received from the dental profession, the medical profession, the school teachers, the nurses, social service clubs, government officials and others, enabled us to accomplish a result we had hardly dared to hope for.

W. CECIL TROTTER,
Chairman of Executive Committee.

IN PRESENTING this report of the Saskatchewan Mouth and Health Campaign, February 20th to April 1st, 1928, an attempt has been made not only to present you the material and tangible factors that were concerned, but to embody in it some of the atmosphere and spirit that prevailed from one end of the Province to the other and from the beginning to the end of the programme. These intangible things, combined with the splendid spirit of co-operation, were largely responsible for the success—and it was a success—of the campaign. The primary motive of the effort was the promotion of Mouth Health, but as the campaign progressed it became apparent that it had taken on the form of a general health programme from a dental health standpoint. This feature brought about a greater success than we had anticipated, due to the fact that it has tied up the profession of Dentistry with every public welfare and health organization in the Province. This will have a permanent value in general health campaigns for the future.

While the Saskatchewan Mouth Health Campaign was organized, financed and carried out by the Canadian Dental Hygiene Council, on the invitation of the Saskatchewan Dental Society, it developed into a co-operative effort, in which the Dental profession was joined by the Provincial Government of Saskatchewan, various organizations, individuals and officials throughout the length and breadth of the Province; so that it is possible, broadly speaking, to report what was done in one sentence: The entire Province of Saskatchewan took a course in Preventive Dentistry.

The campaign was not an experiment, for its aims were well defined from the first. It was not intended purely as an educational effort, to be made up of "evangelistic" addresses and speeches, which would drive home to audiences how bad they were and how good they might be. The programme had been formulated by the Council in the hope of reaching every man, woman and child in the Province with the information that Mouth Health means better general health,—that diseased teeth in a diseased mouth lead to ill health, disaster and sometimes death. In so far as it was an educational campaign, it was education for action, and the action consisted in a definite movement on the part of individuals for better mouth health personally.

Saskatchewan is one of the Dominion's younger provinces. Its width is approximately 350 miles, and it stretches to the north for more than 700 miles. Scattered over this area is a population of, roughly speaking, 836,000 persons. Here those in charge of the campaign were faced with the fact that the Province has proportionately

more new Canadians than any similar division of the Dominion. In addition, the majority of the people are of the younger generations. Comparatively speaking, there are few old people. The school attendance, for instance, is the largest in proportion to population of any province in Canada.

These new Canadians have come from countries where they have not had the advantage of health education, nor any propaganda or publicity along educational health lines. They must be physically fit when they arrive in our country, or they are not allowed to enter, but our preliminary surveys indicated that they had not fully understood that the change in their environment when they emigrated to this new land, involving as it did a change in diet, also demanded different methods of mouth care.

These people, however, are intensely interested in health subjects—eager to learn and keenly alive to anything that is new to them. They are vitally concerned with the question of sane standards of living, and even more vitally affected by anything which touches the health, well-being or education of their children. These facts are given here because they were matters which had to be considered in detail before the inauguration of the work, and because they demonstrated that Saskatchewan offered an unusual field.

Preliminary Organization

For the purpose of organization, the Province was divided into sixteen districts, each district with a local committee and chairman. In many of the districts an endeavour was made to have this committee made up of a Red Cross worker, a medical health officer, a representative of the service clubs or churches, and a representative of the press, with one or two dentists added in every case to maintain dental contact.

The task of co-ordinating the different phases of the programme and supplying general leadership was the par-

ticular work of the Canadian Dental Hygiene Council. The Field Secretary visited each section, met the committee there, had interviews with executives and officials of every organization whose co-operation and support was hoped for. In conference with the committees, programmes of activities were outlined to suit each district.

A first meeting for organization purposes was held, in every case, thirty days before the date of the actual campaign. This gave ample time following organization to secure the greatest publicity and enlist support, thereby creating the maximum of interest in advance throughout the general public.

Co-Operation

The Profession of Dentistry.—Any mouth health campaign has a unique advantage in that it can secure in every Canadian province a nucleus of trained workers, ready to assist wholeheartedly in the carrying out of any programme. This is the Profession of Dentistry.

The assistance which its members can, and do, render under such circumstances as the Saskatchewan campaign, is of such value that it is scarcely possible to overestimate it. It is to the great credit of the profession that 100 per cent. of its members give of their time and knowledge, earnestly and without stint, in order to promote preventive dentistry in all its phases.

In this particular regard the Profession of Dentistry stands out unique. It has been rendering a service to the nation and to the community which could only be undertaken by men actuated by the highest professional ethics and personal ideals. It is carrying out a work which, from one point of view, defeats the profession's own ends. It is sponsoring, with a great deal of energy, an effort that does not in any sense mean financial remuneration—in fact, it means the opposite.

The dentists of Saskatchewan from one end of the Province to the other, without one single exception, entered magnificently into this recent cam

paign, assisting in organizing as well as in carrying out every phase of it. As a concrete example of this we would like to report the progress of the preliminary arrangements in one Saskatchewan city. The city has 24 dentists. At the organization meeting, when a general invitation had been sent out, asking all those interested to attend, 22 dentists came to take part. On the opening day of the campaign 24 dentists left their offices to aid in the work of inspecting school children. This is but an example of the co-operation given in every city and town throughout the Province.

Government of the Province of Saskatchewan, Department of Health.—A happy feature of the campaign was the complete and outstanding co-operation of the Department of Health. The Hon. Dr. Uhrich, Minister of Health; Dr. Middleton, Assistant Deputy Minister, and Dr. Seymour, Special Adviser to the Department, individually gave us co-operation and assistance and, in many instances, leadership of a very tangible sort. Also, letters were sent out from this Department to its staff and public health workers, directing them to devote their time during the campaign to the promotion of its programme. A letter was also sent to each medical officer of health—over five hundred in the Province—asking him to organize meetings, act as chairman, if necessary, and to promote, through his own committee, the general programme and its objects. Under these auspices, too, a great deal of valuable publicity was secured, notably in its authorization for the use of all motion picture films, which saved the committee considerable financial outlay.

Department of Education.—The Department of Education, Hon. Mr. Gardner, Minister, and Mr. Ball, Deputy Minister, were apparently just waiting for some such organized effort to promote mouth health, for not only was their co-operation immediately available, but they placed at our dis-

posal their departmental machinery to assist in every way possible. Through the medium of school inspectors, principals and teachers, the Department of Education made possible achievements which could not otherwise have been attained. Through the co-operation of this Department it was possible to get direct results among school teachers and their pupils, as well as in the ranks of Normal School students. From the Department a personal letter was sent to every principal and teacher in the whole province, asking definite co-operation and requesting that they place set periods during the school hours at the disposal of our programme committee, so that addresses might be arranged. This assistance made possible a very splendid programme in this field, under the best auspices. Ample time was given to the workers and every facility placed at their disposal. The Department of School Hygiene, under the Department of Education, Miss Ruby Simpson, Director, gave very valuable assistance throughout the entire campaign to the Central Committee and every local committee throughout the Province. Miss Simpson devoted a great deal of her time to organizing and promoting the free travelling dental clinic, and in a great measure the success of this effort was largely due to her assistance.

Red Cross.—Saskatchewan is particularly fortunate in that it has a very vigorous Red Cross Society, headed by Commissioner Marshall. The Provincial organization, through the assistance it gave in arranging meetings, promoting publicity and enlisting the support of its workers, was responsible for a large measure of the campaign's success. The financial assistance which the Provincial Red Cross gave in providing filling material for the free travelling dental clinic aided in a very tangible way one of the most successful parts of the great work.

Department of Publicity.—One of the most troublesome features in organizing a mouth health programme heretofore has been to obtain the desired co-operation from the newspapers. During the Saskatchewan campaign this matter was very splendidly taken care of for the committee by Mr. W. J. Kerr, Director of Publicity for the Province. Five special articles on Mouth Health and Oral Hygiene, which had been prepared by the committee, were issued by the Director of Publicity and appeared in 102 newspapers. In no other way could the Province have been covered so completely. Besides these, the energy and news value of our programme inspired many editorials and gave first page prominence to reports of our meetings. The Saskatchewan Mouth Health Campaign owes a great deal of its success to Mr. Kerr.

Materials Used In The Campaign

Moving Picture Films.—During the Saskatchewan Mouth Health Campaign 31 special mouth health films were used. Of these, 25 were what is called "trailers"—short four-minute reels. They were specially prepared for telling the story of the Saskatchewan effort. While short, they did teach in a convincing manner the lesson that mouth health is maintained by certain definite action on the part of the child or individual, and that the following of this teaching has its result in better health and happier life.

Six feature films were used. These were of the ordinary twenty-minute length and utilized a vein of comedy which carried with it a good moral to drive home their story in an interesting manner. Two special films, "Working for Dear Life" and "Diphtheria," were provided by the Metropolitan Life Insurance Company. These were of assistance in broadening out our Dental Health programme into one of general health.

Broadcasting

Radio messages were broadcasted from seven stations in the Province.

The good accomplished through this broadcast is difficult to estimate. These messages carry the story of Mouth Health to regions inaccessible to any other way.

In the preparation of literature for this campaign an attempt was made to teach Dental Health indirectly, through interesting stories and object lessons, and for this purpose two special books were issued—one, for children under ten years of age, was entitled "The Gateway"; the second, for older children and adults, was "The Joy of Living." 65,000 of these, attractively printed in four colours, with readable type and broad margins, were printed and the distribution of them carried out chiefly through school teachers, and school nurses, who took charge of this section of the work, which eliminated waste and made reasonably sure that a copy went into every home. Nurses and teachers in turn were supplied from the local Dental Committee.

In addition, the Provincial Department of Public Health provided and distributed 35,000 books entitled "Mouth Health," which had been specially prepared for them by the Canadian Dental Hygiene Council. Of these 10,000 were printed in the Ukrainian language; thus was served a section of the population which it would have been impossible to reach otherwise.

Addresses and Lectures

During the campaign proper hundreds of addresses were given to general and women's organizations, such as Canadian Clubs, I. O. D. E. Chapters, Farm Women's organizations, Home Makers' Clubs, Service Clubs and Church organizations. Also to students of the Provincial University, students of the three Provincial Normal Schools, to all High School students and Public School pupils, and an unusual opportunity was afforded to address a convention of over fifteen hundred school trustees assembled in convention in Saskatoon. In these, as in every other type of activity, the

effort was made to inspire definite action rather than mere passive acceptance of the gospel of mouth health.

Mouth Examinations

To give our programme concrete form as opposed to abstract teaching, a general mouth inspection of school children was put into effect and became one of the noteworthy features of the whole effort. Each dentist agreed to devote two days of his time to this work, and in one city alone over 9,000 children were examined in two days.

Throughout the entire province nearly 100,000 pupils were inspected, and in each case a chart of the mouth conditions was made in duplicate. One of these remained with the teacher, and the second was sent to the child's home. The chart outlined the condition existing, suggested treatment, and gave some general rules of mouth health. The good accomplished by this one variety of effort was sufficient in itself to make the entire campaign worth while. Not only were children and teachers shown the need of mouth health, through lectures and the distribution of literature, but in a practical manner they learned the details of their own condition, discovered what bearing it had on their future, and also how it could be corrected.

To carry out this work of mouth inspection, the Department of Education provided 60,000 examination charts in duplicate.

Mouth Health Essay Contest

To impress upon the school child in even greater measure the importance of mouth health, an essay contest, open to lower school children, including the seventh grade and high school pupils, was added to our programme. Essays were to be original, not more than 750 words in length. In all the sixteen districts, prizes of \$10 each were given by the Canadian Dental Hygiene Council for the best essays. An additional prize of \$25 was also offered by the Council for the best essay of the sixteen prize winners

previously selected. The judges in each district consisted of a dentist, a school teacher and a newspaper man.

The interest was very keen and thousands of essays were entered. In many districts, too, additional prizes were given by local dentists. The results of the contest demonstrated that there are few more effective ways of interesting the school child in mouth health.

Free Travelling Dental Clinic

Saskatchewan is largely an agricultural province. There are many rural districts which have little or no contact with dentistry or dental services. In many cases the nearest dentist is anywhere from 40 to 125 miles distant. Realizing that a large number of people must be suffering through lack of dental services being extended to them, the Canadian Dental Hygiene Council carried on a free travelling dental clinic as a part of this campaign.

This clinic was a splendidly co-ordinated co-operative effort. The salary of the dentist was paid by the Canadian Dental Hygiene Council; the equipment was provided by the Ash-Temple Co., Dental Supply Dealers in the Province. The Provincial Red Cross supplied the filling materials used in treatment, while accommodation for the clinic as well as living quarters for the operator, were furnished by the Provincial Department of Health. The clinics were carried out in large measure through outpost hospitals, and in every case only where people had no other means of securing treatment. They were never held where there was a resident or a visiting dentist. The needy were taken care of first, younger children given the preference—older ones if there was sufficient time. The Council was fortunate in securing the services of a dentist with a real vision. He performed a high type of service under real difficulties and accomplished a piece of work that will be of lasting benefit to hundreds of people. Close to 1,000

people were treated during the sixty-day period in which this clinic was carried on. A tabulated statement showing the number of operations and details of treatment given is appended.

There is a very great need for a continuance of this free travelling dental clinic. In Saskatchewan, many of those whom we served are many miles away from any sort of health service. The Province owes it to them to make available some means of treatment, since, after all, free grants of land and similar opportunities to settlers are very much reduced in value if there are no means of maintaining and promoting general health.

Tangible Results of the Campaign

(1) A keen interest in general health, from a mouth health standpoint, was aroused in the minds of the general public.

(2) Hundreds of children who had not the means of reaching a dentist, nor the funds to pay, received free dental treatment. In many of these cases, mouth conditions were appalling, and the nearest dentist from 40 to 100 miles away.

(3) The members of the dental profession were greatly stimulated in their attitude towards better mouth health.

(4) There was an awakening in the minds of the leaders of the Government and its several department heads, to the necessity of the Government taking some responsibility for the carrying on of mouth health education.

(5) The bringing together of the Provincial Government and the Profession of Dentistry in this joint effort for better health, will be of lasting benefit to both.

(6) New legislation was introduced and will be put into effect, whereby municipalities may use their funds for reparative and remedial work for the promotion of health. This will enable municipalities that are out of contact with dentistry to bring in and pay a dentist to give necessary treatment.

(7) It was proposed by Dr. Seymour, special adviser to the Department of Health of the Province of Saskatchewan, that the Minister of Health establish a Division of Dental Health in his Department, and appoint a full-time Director of Dental Services to carry on and extend the work started by the Canadian Dental Hygiene Council's active campaign. A committee of dentists, representing the entire province, waited on the Minister of Health, and he gave them assurance that definite action would be taken.

(8) The Minister of Health has promised that organized dental services will be carried on in Provincial Mental Hospitals and other Government Institutions.

(9) During the campaign a splendid co-operation was formed between the Newspaper Publishers of the Province, and the Saskatchewan Dental Association, and as a result a series of mouth health newspaper articles, issued by the Canadian Dental Hygiene Council, are now being published weekly in two hundred and fifty newspapers in the Western Provinces, under the auspices of the Saskatchewan Dental Society.

(10) Full results can be summed up in the following statement: A wonderful service was extended to the entire Province, under most desirable auspices, with perfect and complete co-operation.

In any great undertaking, such as the Saskatchewan Mouth Health Campaign, the great burden of detail work generally falls on one or two individuals. In this particular case, too much credit cannot be given to Drs. A. J. Brett, L. J. D. Fasken, and T. I. Robb, of the Central Committee, who, with untiring energy, devoted a great deal of time, at great personal sacrifice, to the promotion of the campaign from beginning to end. The Council wishes to pay tribute and heartily thank these men and the following for the splendid assistance and service rendered:—

Every dentist in the Province of Saskatchewan.

The government of the Province of Saskatchewan.

The department of health of the province.

The department of education of the province.

The director of school hygiene.

The director of publicity.

The provincial Red Cross.

The newspapers of the province.

All school principals and school teachers.

The dental supply houses—Ash-Temple Co., Dental Company of Canada, the National Refining Company.

Theatre owners and managers.

The service clubs and hundreds of

people who, individually and collectively, gave of their time and knowledge to promote the work which will be of lasting benefit to the health of the people of the Province of Saskatchewan.

It is impossible to incorporate in this summary all of the reports of the campaign received from the various organizations and districts. A few of them, however, are appended and these few are characteristic of them all. There is also one of the prize winning essays. This is very creditable to the essayist, when it is realized that she is but a schoolgirl of fourteen years of age.

HARRY S. THOMSON,

Field Secretary,

Canadian Dental Hygiene Council.

Letters of Appreciation to Dental Hygiene Council

PRIME MINISTER'S OFFICE,
CANADA.

Ottawa, May 25, 1928.

Dr. Harry S. Thomson,
Canadian Dental Hygiene Council,
86 Bloor Street West,
Toronto, Ontario.

I take this opportunity of conveying hearty congratulations to the Canadian Dental Hygiene Council for the splendid work done in the Constituency of Prince Albert and throughout the Province of Saskatchewan during their recent campaign.

The work is of high merit and worthy of public recognition since it afforded dental care to thousands of children, who might otherwise have suffered neglect in this respect, but for the free examination and treatment arranged by your Council in co-operation with the Red Cross Society, the Saskatchewan Departments of

Health and of Education, Service Clubs and School Board.

—W. L. MACKENZIE KING.

GOVERNMENT OF THE PROVINCE
OF SASKATCHEWAN

DEPARTMENT OF PUBLIC HEALTH
Regina, Sask., March 24, 1928.

Canadian Dental Hygiene Council,
86 Bloor Street West,
Toronto, Ontario.

The Department of Public Health of the Government of Saskatchewan has been very pleased to co-operate with the representative of the Canadian Dental Hygiene Association, Dr. H. Thomson, and the Provincial Dental Committee in the Mouth Health campaign, which has been sponsored by them in our Province.

Dr. Thomson, and the Provincial Dental Committee first interviewed the Minister of Public Health, asking that

the campaign be introduced throughout the Province, as being endorsed by the Department. This was done by writing all the Medical Health Officers in the Province, advising them of the nature of the campaign and asking for their support in the way of giving addresses and otherwise assisting in informing the public of the purpose of the campaign. They were asked to let the Chairman (dental) of the local district know in what way they would assist. In this manner the co-operation of the Medical Profession was obtained.

Inasmuch as the Department of Public Health had never published any literature appertaining to teeth and mouth hygiene, for distribution, it was decided to have 25,000 booklets in English and 10,000 in Ukrainian, printed to be sent out as suggested by the Provincial Committee, to the various sub-districts. The demand for these pamphlets has been very great, indicating that the time was opportune for the publication of such a booklet.

The Department further communicated with the various hospitals situated in places where Clinics were to be held, asking them to co-operate to the extent of furnishing accommodation for the free Dental Clinic, and maintenance for the Dentist, while at the Clinic, as the contribution of the community to this worthy object.

The whole campaign has been a success, inasmuch as it has stimulated not only the general public, but also the whole Dental profession to the value, necessity and possibilities of mouth health. The campaign has been the means of placing this branch of preventive work in Saskatchewan on the plane to which it belongs and has brought the Dental profession in much closer touch with the Department of Public Health, than it has ever been in the history of the Province.

The thanks of the people of Saskatchewan is due the Canadian Dental Council, in making this campaign pos-

sible; the Dental profession is to be congratulated on the splendid reception and united support it has given to the Provincial Committee in charge of the various districts; great credit is due the Provincial Committee, who so successfully arranged the details of the campaign, and to Dr. Thomson, the representative of the Canadian Dental Hygiene Council, who directed the line of attack.

From a Public Health viewpoint it is hoped that the Dental Profession may carry on in this good work and make this splendid beginning the basis of continued efforts.

F. C. MIDDLETON,
Acting Deputy Minister.
Department of Health.

GOVERNMENT OF THE PROVINCE
OF SASKATCHEWAN, DEPART-
MENT OF EDUCATION. OFFICE OF
THE DEPUTY MINISTER.

Regina, Sask., March 28, 1928.
Canadian Dental Hygiene Council,
86 Bloor Street West,
Toronto, Ontario.

The oral hygiene campaign carried on recently in the province of Saskatchewan, made possible by the co-operation of the Government of Saskatchewan through its Department of Public Health and School Hygiene and the Canadian Red Cross Society with the Canadian Dental Hygiene Council and the members of the dental profession was, from the point of view of the Department of Education, most successful. This Department through its school hygiene branch has for many years carried forward a programme of general health education of which oral hygiene formed an important feature.

The school hygiene branch has always realized the fundamental importance of oral hygiene in relation to general health. Consequently, it was able to contribute to the dental campaign a wide and effective experience based on its intimate knowledge of the field. Recognizing the needs of the children with respect to oral health,

the enthusiasm of our school nurses for the campaign was immediate and spontaneous and easily led to direct, efficient co-operation with the Canadian Dental Hygiene Council. The results of the campaign may be found specifically in the excellent dental treatment given to large numbers of children of school age and of pre-school age and in a larger way in the instruction given to parents and the public on the relation of oral hygiene to general health.

The campaign was a fine example of public service. The children of the province have been greatly benefited and the attitude of the public toward dental work and the dental profession has been greatly improved. I wish to congratulate the officials of the Canadian Dental Hygiene Council and the dentists of the province on the splendid results accomplished.

A. H. BALL,
Deputy Minister.

Mouth Health

Prize Winning Essay of School Girl of Fourteen Years.

If we made a careful study of the body and its parts we will find the teeth among the most important. Perhaps no part more directly governs our physical and mental development. Teeth kept healthy and strong insure for us good looks, good health, efficiency in work, comfort, and contentment. They may be guardians or enemies of our health and happiness. It all depends on the attention or neglect with which we regard them.

Sir William Osler said, "There is not one single thing in preventative medicine that equals mouth hygiene and the preservation of the teeth." He was right. Recently it has been discovered that a diseased tooth injures the health of the whole body, through the heart and blood stream, so it is necessary for our health and happiness in future years to take good care of our teeth when we are young.

Our teeth have a hard coating on the outside, called enamel, which protects our teeth from germs. This enamel for our permanent teeth is nearly all formed before we are many months old. Often, however, owing to an unsuitable diet, teeth are erupted with

tiny cracks in them. These should be filled at once.

Underneath the hard, protective enamel lies the dentine. This is much softer, and once the germs get through the enamel they make short work of the dentine.

Under the dentine is found the cavity in which are found nerves and blood vessels. Once the germ gets to the nerve the tooth aches and soon an abscess forms. This should be prevented if possible.

The tooth is held in its socket in the jaw by a root surrounded by a membrane called the peridental membrane, and exercise is needed for the health of this root-membrane.

But other things are necessary before we have good teeth.

The care of the teeth really begins before birth, for when a child is born it has the crowns of the baby teeth and portions of the permanent teeth formed. The strength and vitality of a child's teeth depend, therefore, on the food and health of the mother. A proper diet includes milk, leafy vegetables, fruit, preferably fresh, butter, eggs, whole wheat bread and other similar things. If these things are the best diet for the beginning of a child's

teeth, don't you think they will be best for continuing the growth and health of our teeth?

When baby's teeth appear they should be properly cared for. Foods containing mineral salts and vitamins are important. Erupting teeth should be cleaned with a piece of clean cloth dipped in a normal salt solution and wrapped around the index finger. Now wipe the mouth out carefully. When the first eight teeth have erupted a tiny tooth brush, with or without an unmedicated tooth paste, may be used. Baby teeth influence the growth of the permanent teeth, so every precaution should be taken in caring for them.

Six year molars, coming in behind the baby set, are the first permanent teeth a child gets. Then others follow, some replacing the first ones, others coming in behind them, till at the age of about sixteen or eighteen years the full set is in position. Special care should be taken with these, as they

are to last a lifetime, and proper food, such as previously described, is best for them. The dentist should be visited at least twice a year; teeth brushed carefully with a circular motion at least twice a day; tiny cavities looked after; plenty of physical exercise taken; also proper rest, plenty of fresh air and sunshine, and above all, proper exercise of the teeth. Hard crusts of bread are good for exercising the teeth and jaws. The child who has been taught from the first to chew its food well will have far less trouble with teeth and digestion later on.

Chewing brings a healthy blood supply to the roots of the teeth, and prevents the formation of thick, ropy saliva, and keeps the mouth cleaner. These results in turn decrease the number of cases of pyorrhoea and tooth decay. Ill health has gone out of fashion and to be healthy and strong we must have good teeth. If every one realized the importance of this there would be far less sickness.

Report of the C.D.H.C. Executive Committee for the Year Ending May 31, 1928

W. C. TROTTER, B.A., D.D.S.

Thanks to the financial assistance given the Council by the Dominion Government and the Canadian Red Cross Society your executive committee is able to show more concrete results from its labors of the past year than for any of its predecessors.

In addition to carrying on our customary duty of providing educational material such as lantern slides, moving picture films, outline lectures, charts, pamphlets, etc., for use throughout Canada, this year we have devoted most of our time and resources in assisting the Saskatchewan Dental Society to carry out a province-wide mouth health campaign which has probably never before been equalled either in scope or results.

Our Field Officer, Dr. Harry S. Thomson, spent more than three months out in Saskatchewan devoting the whole of his time to this work and succeeded in securing the complete co-operation of the dentists and physicians, the Provincial Government, the Department of Health and Education, the Director of School Hygiene, the Director of Publicity, the Provincial Red Cross Society, the newspapers of the province, the school principals and teachers, the Social Service clubs and many other organizations. We are deeply indebted to all these organizations and more particularly to all the Saskatchewan Government officials, including the Hon. Dr. Uhrich, Minister of Health, Dr. Middleton, assistant Deputy Minister, Dr. Sey-

mour, special advisor to the department, the Hon. Dr. Gardner, Minister of Education, and Mr. Ball, his deputy minister, also to Miss Ruby Simpson, Director of School Hygiene for the Department of Education, and to Commissioner Marshall of the Provincial Red Cross Society and also to Mr. W. J. Kerr, Director of Publicity for the province.

It seems to be the unanimous opinion of all organizations, officials and individuals throughout the province that the outstanding success of the whole Saskatchewan undertaking was a tribute to the organizing genius and personal magnetism of our Field Officer, Dr. Harry S. Thomson, who seems to have inspired enthusiasm and optimism in the soul of everyone with whom he came into official contact. Dr. Thomson visualized the possibilities of such a campaign as this, and had the energy and determination to organize and carry it through. To do this he had to harmonize many conflicting interests and consolidate and organize the various interests of a whole province and in that he succeeded beyond our fondest dreams. He has earned the unstinted gratitude and praise of this Council.

The outstanding result of the Saskatchewan educational campaign was the assurance of the Minister of Health that some action would be taken towards the creation of a department of Dental Health and the appointment of a full time director of Dental Services. The Minister

has also promised that organized dental services will be provided in Provincial Mental hospitals and other government institutions.

The Saskatchewan Provincial Dept. of Public Health provided and distributed 35,000 booklets entitled "Mouth Health" specially prepared for them by this Council. Ten thousand of these were in the Ukrainian language. Through the generosity of the Canadian Life Insurance officers Association who contributed \$2,700, we were able to supply 65,000 special booklets entitled "The Gateway" and "The Joy of Living" respectively. We also have to thank the Metropolitan Life Ins. Co. for loaning us two moving picture films. The Council had calculated on not spending more than \$3,500 in Saskatchewan, but by the time all accounts are paid I fear this sum will be exceeded.

The Saskatchewan campaign has again demonstrated to us the enormous value of the goodwill and co-operation of the Canadian Red Cross Society. The personality and organizing ability of Mr. Marshall, the Red Cross Commissioner for Saskatchewan, was invaluable to us. We are most grateful to the Red Cross Society for another donation of \$2,500. towards our next year's budget. I am also glad to announce another grant of \$5,000 by the Dominion Government. These contributions should enable us to duplicate our efforts of the past year and to accomplish something big in the way of mouth health educational work. The Canadian Oral Prophylactic Association continues to loan us the services of Dr. Harry S. Thomson, whose time this past year has been almost exclusively at our disposal, otherwise we could not have had anything like the success we have had. I would suggest that this meeting take some official recognition of

all the favors we have received from these different sources.

We have been very fortunate in getting the consent of Dr. Allan Brown, the well known Pediatrician, to become a member of the executive. His opinion in regard to the influence of diet on the teeth and the general health of the mouth and the effect of mouth conditions upon the general health should make him a most valuable addition to our committee.

During the year we have assisted in organization work in some of the other provinces and there are opportunities awaiting us for further work in these provinces. From among these Manitoba has come forward with a specific invitation for us to assist them in some sort of a mouth health campaign and we should give this suggestion careful consideration.

I am glad to say that we hope to have present with us at the annual meeting Drs. Brett and Fasken of Saskatchewan, who were in charge of the organization of dentists in that province which guided and controlled the recent educational campaign. These two gentlemen spared neither time nor money in order to ensure the success of the work which they had undertaken and we can assure them that we appreciate the sacrifices they made and the results they attained.

The executive committee have been unable as yet to work out any satisfactory plan for the examination and care of the mouths of immigrants. The situation has become still more difficult owing to the change the Federal Government has made in having intending immigrants medically examined in the Old Country instead of in Canada.

W. CECIL TROTTER,
Chairman.

Report of the Field Secretary, Canadian Dental Hygiene Council, Year Ending June 1st. 1928

HARRY S. THOMSON, D.D.S., TORONTO.

The task of reporting on the activities of the Canadian Dental Hygiene Council for the past year is a very pleasant one, because it is a record of the accomplishment of our hopes, as expressed in the programme which was presented to you at the last Annual Meeting. The year was most successful because it was possible to carry out a very energetic mouth health and oral hygiene programme.

Some definite work has been accomplished in five provinces of the Dominion. In one province, a very extensive programme was successfully carried out, working in conjunction with the Provincial government. In the four other provinces, organization work was started and already some tangible results of this can be recorded.

Immediately following the last Annual Meeting, during the summer months, work was carried on in the three eastern or Maritime provinces. In the province of Prince Edward Island, your Field Secretary visited the greater number of the dentists in their offices, the object in view being to arouse an interest in Oral Hygiene and travelling dental clinics. Some initial effort to establish travelling dental clinics had already been made by the Red Cross, under the direction of Miss Wilson, Secretary for the province. The result of these visits was a general meeting, held in Charlottetown during the last week in August, at which were present 94 per cent. of the dentists of the entire province. This

meeting was a very enthusiastic one. Keen interest was manifested and definite action taken by the appointment of a committee to consult and work with Miss Wilson, under the auspices of the Prince Edward Island Dental Society, in working out a plan whereby much needed work might be accomplished in districts which are out of contact with dental services. The dentists in Prince Edward Island are very keenly alive to the situation there and know of the existing need for Oral Hygiene educational work to the public. The difficulty has been that the dentists are relatively few in number, and as Prince Edward Island is an agricultural province, the distances are greater between dental centres. I am very glad to report that some actual work has been accomplished by the Committee during this past year, and we are looking forward to this year's meeting in July for reports of further action.

In New Brunswick I attended a meeting of the New Brunswick Dental Society. Here I had an opportunity of meeting the different members, and also of presenting the story of the Council to their meeting. The great problem confronting the Province of New Brunswick is the illegal practitioner and the need of better dental legislation. During each of the past three years an attempt has been made to better this condition, and this year a much better organized effort was made to induce the Provincial government to pass the necessary legislation to bring about

the desired changes. This was not entirely successful, but something was accomplished. This problem of the illegal practitioner has been a very serious one in this province, and the New Brunswick Society has felt that it must first set its own house in order before it could devote much of its time and finances to any Oral Hygiene effort—and rightly so. There is a great need of mouth health educational work in this province, as the dentists are only in the cities and larger towns and many communities are far from or entirely without dental services. New Brunswick has a very energetic Department of Health in its provincial government, and a large number of its dentists—particularly in two of its cities—are very enthusiastic, and it is hoped that during the coming year, with some relief promised by the Government re the matter of legislation, some action may be taken to provide a very much needed Dental Health educational programme.

I also attended the meeting of the Nova Scotia Dental Society, held in Sydney, N.S., and was extended the privilege of a prominent place on the programme, to present once more the work of our Council. Nova Scotia, perhaps, is ahead of the other eastern provinces, and ahead of many of the provinces in Canada in the work it is accomplishing along dental educational lines. Halifax has been a very energetic centre for this work for some years and still is, and this Council has placed itself on record as being ready at any time to assist this province in any further effort which they may see fit to undertake. Nova Scotia is also fortunate in having a very active Red Cross Society. Through that particular agency, and that of the Provincial Government, combined with the keen interest of the members of the Dental profession, much may be accomplished.

In Winnipeg, early in April of this year, I attended a meeting called by the Health Educational Committee of the Manitoba Dental Society, to consider the possibility of a dental health programme being put on in that province early in the year 1929. At this meeting were present representatives of the Department of Health and Education of the Provincial government—also of the city of Winnipeg; representatives of the Red Cross, Social Hygiene Councils, the Board of Education, and many dentists who are occupying important positions in public welfare activity. The story of the Mouth Health Campaign in the Province of Saskatchewan was outlined to this meeting and a general outline of organization discussed, with the result that the Manitoba Dental Society has requested the Canadian Dental Hygiene Council to consider their province when outlining our programmes for the coming year.

In October, 1927, your Field Secretary, at the request of Dr. Leslie McIntyre, met informally with a group of dentists in the city of Edmonton, and discussed with them the aims and objects of the Canadian Dental Hygiene Council, and how its programme might be applied to the Province of Alberta. No definite action has been taken in this regard.

Our greatest effort of the year, as outlined at our last annual meeting, has been the Saskatchewan Mouth Health Campaign. This campaign was a complete success from beginning to end, in that we can record definite accomplishment of the objectives we had from the beginning. While the campaign was organized, financed and carried out by the Canadian Dental Hygiene Council, too much praise cannot be given to individuals and organizations that had a great part in its success. The Provincial Government, its various departments, all public health and welfare organizations, seemed to be

just as interested in, and as keenly alive to the promotion of our programme as were the dentists. It is a great delight to record here that the heavy work involved in such a campaign really developed into a pleasure—a delightful task from beginning to end. A full report of this campaign in all its details is herewith appended. Congratulatory letters regarding it have been received from different parts of the world, including England and Scotland, and many from the United States.

The work carried on from Dominion Headquarters, at 86 Bloor St. West, Toronto, has greatly increased during this past year. Many requests have been received for literature, outline lectures, lantern slides, charts, etc. Our stock of material available has been greatly extended during the past year.

Motion Picture Films:

We have now available to any provincial organization four moving picture films of standard size, each of which teaches a splendid lesson in Oral Hygiene. The titles are "Tommy Tucker's Tooth", "Clara Cleans Her Teeth", "Your Mouth", also "Oral Hygiene."

Posters and Charts:

During the past year we have added a set of four colored posters. Also two graphic charts, for use in Oral Hygiene lecture work.

Lantern Slides:

Our list of lantern slides has been greatly enlarged and 25 sets of these are available on application.

Outline Lectures:

Our outline lectures have been brought up to date and we now have a very complete list of subjects covered. Several radio talks are included in these.

Newspaper Articles:

Our supply of newspaper articles has been supplemented by the addition of a series which was prepared by the Academy of Periodontol-

ogy, and many others written by outstanding dentists throughout Canada.

Through the co-operation of the local newspaper, the dentist can accomplish tremendous good through these newspaper articles. They are carried under the title of The Canadian Dental Hygiene Council. This removes any criticism of the articles being inspired as a purely local effort. These articles advance the standing of dentistry, and as well carry a message to people who, through other auspices, it would be impossible to reach.

Mouth Health Books:

During the past year we have added to our educational material two mouth health books, one for younger children entitled "At the Gateway"; another "The Joy of Living" for older children and adults. In the preparation and publication of these books, an effort was made to provide mouth health literature in an attractive form. With this end in view, we have produced two books of which we are quite proud. Both are printed in colors, generously illustrated, large readable type, and with broad margins. The time and study devoted by the Committee to the material used in these books was well worth while, for I think it is safe to say that the result has been two mouth health books which are much in advance of any like literature heretofore published anywhere. Many letters have been received from health workers all over this continent and Europe congratulating us. Some frank criticisms received on certain phases of some parts of the books will be of benefit in future issues.

Your Field Secretary is deeply grateful for the assistance given during the year by the Metropolitan Life Insurance Company, by the Executive of the Red Cross Association, and by the Life Insurance Officers Association of Canada. Each of

these has in a very particular way made it possible for the work of your field secretary to be carried on much more effectively.

During the past year the occasion has several times arisen for the Council to avail itself of the opportunity to be of some assistance to the Canadian Red Cross, by placing at its disposal, for special duties, the services of your Field Secretary. This has been a delightful task for him, and the Council is every ready to do what it can to promote the welfare of the Red Cross Society and in this way pay some tribute to the wonderful work which it is accomplishing.

To forecast for the coming year. The success of the work carried out during this past year—particularly of the Saskatchewan campaign, stimulates us to further effort for the coming year. It has been proven that, if properly organized, Governments and Welfare organizations in general are right ready to co-oper-

ate with Dentistry in its health educational work.

The Canadian Dental Hygiene Council is the only voluntary organization carrying on this work, in that it differs from other health bodies, where there is a certain amount of overlapping. A great responsibility rests on our Council to see to it that the contacts already established with these organizations are maintained and that the confidence they now have in our organization may be justified. Working with the provincial dental societies alone, the Council can accomplish a great deal of good work; but jointly with the Dental Society, the Provincial governments and public health and welfare organizations, a much greater good can be accomplished.

I am looking forward to the coming year with the hope that the opportunity will be offered to promote a work in more than one section of the Dominion that will be equal to, if no greater than that carried out in the Province of Saskatchewan.



Dr. F. J. CONBOY
President of the Canadian
Dental Association.

DENTAL SOCIETIES

Ottawa Dental Society

The regular monthly meeting of the Ottawa Dental Society was held at the Daffodil Tea Rooms on Monday, March 19th, with Dr. L. E. MacLachlan presiding.

Dr. D. W. C. Coupland was the essayist, who delivered a well prepared paper on "Extraction of Teeth and after Treatment," the general discussion of which brought out many interesting points.

The attendance was, as usual, a large and representative one and the executive were complimented upon the many excellent essayists which they

have been responsible for securing during the past season.

As this meeting concludes the season's activities, the following officers were elected for the coming year:

President—Dr. L. E. MacLachlan.

Vice-President—Dr. I. W. Hamilton.

Sec.-Treas.—Dr. A. W. Grace.

Executive Committee—Drs. C. H. Juvet, C. W. Sheridan, George Hutchinson, S. S. Davidson, T. Provost, Balmer Beattie, C. J. Rogers and W. H. Pritchard.

Auditors—Drs. W. S. Flora and J. G. Dormer.

THUNDER BAY DENTAL ASSOCIATION

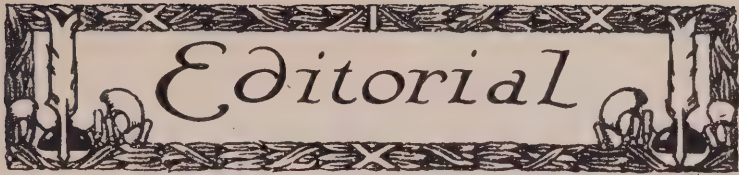
Our annual meeting and banquet was held at the Avenue Hotel here on the 3rd inst. 90 per cent. of the members were present and a representative of law and medicine. After an interesting toast list and some addresses the election of the following officers took place: Pres., Dr. A. V. Sinclair; V.-Pres., Dr. M. P. Bengier; S.-Treas, Dr. H. Gellatly.

DOMINION DENTAL COUNCIL ELECTS OFFICERS FOR YEAR

With representatives of seven provinces present the Dominion Dental Council of Canada elected officers to carry on the work of registering dentists throughout Canada in the course of the annual session at the King Ed-

ward Hotel. Dr. H. A. Croel, the representative from Manitoba, was elected president for the ensuing year, with Dr. A. B. Mason, of Toronto, as first vice-president, and Dr. L. T. Allen, of Lethbridge, Alta., as second vice-president. Dr. W. D. Cowan from Regina will undertake the onerous duties of secretary-treasurer.

Toronto Dental Assistants' Association elected the following officers recently: President, Miss Alta Aiken; vice-president, Miss Elizabeth Hagen; recording secretary, Mrs. Marion Edwards; corresponding secretary, Miss Kathleen James; treasurer, Miss Jean Laing; conveners: Social, Miss Madge Buick; visiting, Miss Ethel Porrie; publicity, Miss Edith Brown; board of directors, Miss Anna Dandsay, Miss M. Nolan and Miss Hill.



Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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NEW BRUNSWICK—Jas. M. Magee, L.D.S., D.D.S., St. John.

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TORONTO, JUNE, 1928

No. 6

The Ontario Dental Association and the Canadian Dental Association

The regular annual meeting of the Ontario Dental Association was held at the King Edward Hotel, Toronto, June 4, 5, 6, 7, 1928. The program was excellent, the clinics were well selected and the exhibits varied and well displayed. The attendance reached the high water mark of eight hundred and eight. The service at the hotel was good. The officers and committees deserve the good will and commendation of the members and the profession generally. Dentistry has made its mark on the public mind during the past few years. This meeting will do much to enhance its standing.

The thanks of dentistry are due to those who so unselfishly gave of their time and energy to bring to the public of Ontario the latest thought in mouth health. Among those worthy of special mention are Dr. Sherman Davis, Indianapolis; Dr. Hyatt, New York; Dr. Edward Kennedy, New York; Dr. Schlosser, Chicago; Dr. Justin Towner, Memphis, and Howard Raper, New Mexico. We recommend those who may forget what was presented to read the program again. The program covered the major part of a course in modern dentistry. We commend to those who make programs to try choosing subjects for discussion and demonstration rather than essayists and demonstrators.

Among the special features of the meeting may be mentioned the garden party at Donalds Farm. The thanks of the Association have already been extended to Mrs. Dunlop. The round table conference at luncheon was a great success. Fewer subjects and longer time would increase its value. Of all the addresses, that of Hon. Doctor Cody at the luncheon was the most helpful. The devotion of a full half day to table clinics was a fitting close to a successful meeting.

The idea of a dental week is very good. First was the meeting of the Board of Directors of the R.C.D.S., then the graduation of the dental nurses and the meeting of the delegates of the Canadian Dental Association. Then came the meeting of the Ontario Dental Association and the Canadian Dental Association, followed by convocation of the University and the meeting of the Canada Dental Hygiene Council, the Dominion Dental Council and the Nurses' and Dental Assistants' Associations.

It is a great economy for all dental organizations to meet about the same time.

Editorial Notes

Following the lead of many other cities, Toronto and Ottawa are each erecting a professional building.

Russel W. Robertson, of Almonte, Ont., won first prize in the third year at McGill.

Dr. Dunlop of Orillia, Ontario, claims to have found a cure for pyorrhea. It seems he went to Vienna, Austria, where the university gave him the opportunity of demonstrating his process. His method of forcing oxygen into the tissues of the mouth has been in use in America for many years.

At convocation, Alberta University, May 15th, the following young men were admitted to the degree of Doctor of Dental Surgery: Faust Gowda, David Charles Haworth, Clarence Dudley Husband, John Ivan Lesik, Hector Robertson Maclean, Benjamin Wilson Richardson, Paullo Zakus.

Dr. A. R. Poag is president of the Hamilton Academy of Dentistry.

Dr. J. W. G. McKay, Oshawa, is to conduct an investigation to consider the best methods of conducting a dental clinic. Are there no dentists in Oshawa who could do this kind of thing?

Dentists in England are now allowed a rebate on their income tax for furnishing their offices with magazines for their patients to read.

A section of the International Dental Association has been organized in Halifax. Researches are to be made in filling materials and plaster of paris. The latter is found in Nova Scotia.

The Board of Directors of the Royal College of Dental Surgeons of Ontario: Dr. R. Gordon McLean, Toronto, President; Dr. S. S. Davidson, Ottawa, Vice-President; Dr. S. M. Kennedy, London, Registrar; Dr. W. G. Thompson, Hamilton; Dr. W. M. McGuire, Simcoe; Dr. G. H. Holmes, Owen Sound; Dr. J. A. Shannon, Sault Ste. Marie.

U.S. DENTISTS WILL LEAVE HERE TO CONDUCT SUMMER COURSE IN NEW ZEALAND.

Five dental experts from the University of California will sail shortly for New Zealand, where they have been invited to conduct a summer course for 115 members of the New Zealand Dental Association in June. The party, selected by Dean Guy S. Millberry of the College of Dentistry, will include Dr. E. H. Mauk, Dr. Henry Miller, Dr. J. Raymond Gillingham, Dr. R. B. Giffin and C. O. Tufts.

The party will sail from Vancouver on May 30 for Honolulu, and arrive in New Zealand by way of the Fiji Islands.

SIXTEEN DENTAL NURSES

Sixteen young women have completed their examinations in the course of dental nurses, and have been passed, as fully qualified, by the board of directors of the Royal College of Dental Surgeons of Ontario: Miss A. Hazel Bennett, Miss Sadie A. Bradey, Miss Vilma L. Burns, Miss Anna K. Connor, Miss Mary E. Ferguson, Miss Bertha J. Gee, Miss Ann E. Hall, Miss G. Jean Hall, Miss Georgina Henderson, Miss Agnes E. Luxton, Miss Madeline E. Leggett, Miss Kathleen G. McCordick, Miss Norah E. Moore, Miss Rose M. Morgan, Miss Margo H. Ross, Miss Dorothy M. Welsh.

The Dental Nurses' Alumnae held their annual dinner in a private ball room in the new Ford Hotel. The tables were prettily decorated with pink hydrangeas and novelties. During the dinner hour community singing was enjoyed by all, with Miss Jean Collins at the piano. Mrs. Ellis sang several songs in her usual charming manner, and also Miss Welsh. Six girls of the graduating

class entertained with a dance. Miss Aitken acted as toastmistress. Favours of flowers were presented to the retiring officers and candies to the artists of the evening.

WHAT WOMEN ARE DOING

The regular monthly meeting of the Toronto Dental Assistants' Association was held recently in Willard Hall, with Miss Alta Aitken presiding. The following report of Miss M. Gertrude Wiggins, convener of the Nominating Committee, was adopted: President, Miss Alta Aitken; vice-president, Miss Elizabeth Hagen; recording secretary, Mrs. Marion Edwards; corresponding secretary, Miss Kathleen James; treasurer, Miss Jean Laing. Conveners: social, Miss Madge Buick; visiting, Miss Ethel Porrie; publicity, Miss Edith Brown. Board of Directors: Miss Anna Dandsay, Miss M. Nolan and Miss Hill.

Sudbury dentists have announced their intention of closing their offices on Saturdays at 12.30 p.m. during the period extending from May 15th to September 30th next.

The court of British Columbia has granted a Dr. Neff of Saskatchewan a license to practise in that province. Mr. Justice McDonald said "the Council has taken too narrow a view, in my opinion, of what the legislature intended when it passed the Dental Act." "The legislation took the view that there should be comity between the provinces." This latter clause would indicate that B.C. might just as well join the D.D.C. if they are going to be compelled to accept licentiates from all other provinces.

The will of the late Dr. G. M. Hermiston has been straightened out and his widow will be the sole heir.

Results of Examinations in Faculty of Dentistry, Toronto

The following candidates were successful in obtaining standing at the recent examinations in the first year in the Faculty of Dentistry. Where a candidate's name is followed by a subject or subjects in brackets a supplemental examination must be passed in such subject or subjects.

First Year

Gordon George Beesley, John Alexander Black, Philip Charles Cooke, Louis Julius Cote, Andrew St. Clair Duncanson, Bruce Rodger Jones, Randolph Sanford Kinney, Eric Francis Kusch, Ralph Palmer Markle (chemistry, science and civilization), Thomas Leslie Marsh, Stanley Arthur Earl Merritt (chemistry, P.T.), James Burns Milne (physics), Harold Mitchell, William Osborne Nursey (biology, physics), Clarence John Orton, Charles Gordon Pearson, Harold Allan Shaver, Gerald Edmunds Stafford, Henry Arthur Jenson Thompson, George William Willmott (physics), Wilbert Leslie Wood, Ronald Alfred Wylie, Charles Leroy Hampton (physics).

The following candidates were successful in obtaining standing at the recent examinations in the second year in the Faculty of Dentistry. Where a candidate's name is followed by a subject or subjects in brackets a supplemental examination must be passed in such subject or subjects.

Second Year

John James Armstrong, Leslie Weymark Backus, George William Barrett, Donald Black, Allan Abe Bloom, Norman Leo Bonnell, Hugh Alexander Box (anatomy), Lincoln Jacob Brohman, Clifford Wallace Burnett, Darrell A. Campbell, Rodger Lloyd Clayton, Harold Camp-

bell Cobban, Leslie James Conn (anatomy), Donald Murchey Davison, Robert Ellis Diprose, James Reid Edmonds, Robert Harry Empson, Ab Golden, Arthur David Goldin, William Harrison Herron, Lloyd Alexander Hertell, Norman James Hiscox, Gordon Willis Holden, Sidney John Hopkins, Cecil George Hough, Israel Lyon Hyman, James Francis Kickham, William Herbert Clarence Ledger, Gordon Dargavel Leggett, Lesley Malcolmson (Miss) Leitch, Charles David Levy, Howard Royden Lindsay, Colin Archibald Lumsden, Elwin Sparling Macartney, Stewart Alexander MacGregor, Harry Arthur Malcove (histology), Joseph Ralph Edgecomb Martin, Clifford Tisdale Mason, Gordon Alexander Mickle, Albert Clinton Clark Mills, Edgar Morrison Murphy (histology), Vincent Basil O'Reilly, Alvin Francis Perkins, Samuel Raxlen, Richard Frederick Rogers, Charles Albert Rudell, Stauffer Cassell Shantz, David Everett Shultis (illness, anatomy, dental anatomy, histology, operative dentistry, prosthetic dentistry), Edward Gladstone Sinclair (anatomy), John Clare Stevenson, Douglas McGill Tanner, Trevor Cecil Trotter, Robert Lawrence Twible, Horace Clifford Walton-Ball, Hyman Zack.

The following candidates were successful in obtaining standing at the recent examinations in the Third Year in the Faculty of Dentistry. Where a candidate's name is followed by a subject or subjects in brackets a supplemental examination must be passed in such subject or subjects.

Third Year

Stuart Campbell Ackland, Harold Edey Armstrong (materia medica

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and biochemistry), Cecil John Baxendale, Abe Herman Bernstein, Frank Edward Beube, William Ellsworth Black, George Albert Blanshard, (metallurgy); John Frederic Brown, Ernest Albert Carr, Cecil Edwin Chambers, Marshall Allan Chantler, Arthur Edward Clarke, (metallurgy); Alonzo Lorenzo Cook, (materia medica and physiology); Michael Vincent Cosentino, James Percival Coupland, James Orval Crabbe, Marvin Logan Craig, Milton Richard Culbert, Robert Gordon Cummings, Fothergill William Dewar, Wilbert Austin Dinniwel, Norman Oscar Doner, John Nelligan Dore, Alexander Stanley Dunn, Nelson Evans, Raymond Joseph Fleming, William Gordon Fraser, Harry Gerston, Isadore Greenberg, Oddur Gestur Halidorson, Edmund Lorne Hardman, (materia medica); Frederick Erle Harris, D'Arcy Graham Hilliard, Harry Horwitz, (metallurgy); August Bjorgvin Ingimundson, George Nelson McPhaden Johnson, Cameron Langford Johnston, (materia medica and physiology); Harry Myer Jolofsky, William Goldwyn Joynt, Richard Gordon Knowles, Kenneth Isar Levinson, Louis Sydney Lockatch, Alexander Davidson McKee, (materia medica); Wilbert Guy Mahaffy, Milton Ambrose Marling, Joseph Hector Merrell, William Model, George Alfred Morgan, John Earl Moser, Charles James Paterson, Clifford Sifton Robertson (materia medica and physiology); Earl Shapera, Wesley Eugene Smart, Lewis Hiram Smith, Howard Orville E. Stanley, John Barclay Gordon Stewart, Gordon Roy Stinson, (materia medica); Colin Irwin Treadwell, Harold Alexander Trotter, Max Wachnow, Douglas Herbert Walden.

The following candidates were successful in obtaining standing at the recent examinations in the Fourth Year in the Faculty of Dentistry. Where a candidate's name is followed by a subject or subjects in

brackets a supplemental examination must be passed in such subject or subjects.

Fourth Year.

William Reid Auger, Harry Everett Barker, Edward Milner Box, Edward John Bramah, Arthur Cameron Brown, Ralph Nelles Brownlow (applied physics); George Arthur Buchanan, Russell Roy Butler, John Gordon Chalmers (bacteriology and pathology); John Albert Cummer, Roy Livingston Currie, Lloyd Davis, Charles McKee Finlay, Flemming Ambert Fraser (clinical dentistry); Alexander Ambert Fraser (applied physics, bacteriology and pathology); Willard Paisley Gruer, Francis Michael Hall, George Coultis Hind, Ralph Clayton Honey, Albert Henry Hudson, William James Spence Jackson, Gordon William Johnston, Michael Vincent Joseph Keenan, George Kingman, Howard Raymond Konkle, Robert Samuel Langstroth, John Wilfred MacVicar, John Harold Maitland, John Allinson Marshall (applied physics); Frank Joseph Masiello, James Copland Milne, Arthur Burrows Morrow, James Harvey Moyle, George Newman Murphy, John Edwin O'Brien (applied physics); Samuel Louis Portigal, Miss Marion Sarvis Priest, Allan John Quick, Alexander Haldane Reid, Franklin Merlin Roulston, Floyd Marion Serena (applied physics, bacteriology and pathology); Carl Lloyd Skinner (bacteriology and pathology); Andrew Arthur Somerville, Shaw Cecil Stewart, Francis James Stodgell, John Milton Warren, Laurence Arthur Washington, George Archibald Watson, Selby Kavanagh Wetmore, Gerald William Whitaker (applied physics); Orman Brandon Whitman.

The following candidates were successful in obtaining standing at the recent examinations in the Fifth Year in the Faculty of Dentistry. Where a candidate's name is followed by a subject or subjects in



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Fifth Year

Percy Gordon Anderson, Thomas Ernest Armstrong, Harry Pattinson Bishop, John Frederick Brock, Lawrence Dougald Carmichael, Howard Maxwell Corlett, Harry Arthur Corman, Omar James Davies, Myles Archibald Joseph Deagle, John Croft Dempster, William Percival Devins, Campbell Allen Findlay, Fred Allen Flora, Donald Ruskin Freir, Harry Frederick Galloway, (prosthetic dentistry, clinical dentistry); Henry Alfred Goldfinch, (B.D.S.); James Wallace Graham, James Alexander Grant, John Henry Graves, Norman Hymie Greenberg, James Bruce Greer, George Carrick Hare, Lorne Dale Haselton, Douglas Cecil Hay, John Vincent Herbert, Robert Lowell Hewitt, Arthur William Irwin, Hugh Alphonsus Thomas Keenan, John Almer Lappin, William Levene Lawson, Gordon Craib Layter, Abe Leith, James Coyne Lindsay, Alexander Lipson, John Mathew McBrien, Hugh Michael McCaffery, (orthodontia, clinical dentistry); John Allan Macdonald, Donald Archibald Roy McDougall, Earle Elwood Maynard, Fred Stewart Mills, Leonard Robert Mitton, Harold Forster Mof-

fat, Richard Charles Moore, John Vincent O'Shaughnessy, (clinical dentistry); Herbert Baden Powell, Thomas Wesley Richards, Henry Murray Robb, James William Robson, John Murray Roland, William Edward Romph, Thomas Neil Scott, Albert Williams Sheridan, Leo Rex Slemon, William Gordon Snodgrass, Russell Mills Sparling, Stanley Edgar Stacey, Alexander Austin Stewart, (illness, clinical dentistry); Joseph Ernest Tilson, Charles Edgar Toll, William Arthurs Wolfe, Edward M. Warren.

The Royal College of Dental Surgeons (the licensing board for Ontario) has granted the title of Licentiate of Dental Surgery to all unconditional members of the Fifth Year named above, except Mr. H. A. Goldfinch, who is returning to Australia, Mr. H. B. Powell, who is returning to Alberta, and Messrs. H. A. Corman, M. A. J. Deagle and N. H. Greenberg, who are returning to Manitoba; and also to Dr. F. A. Kohli.

Bachelor of Science in Dentistry

The following candidates will be granted the degree of Bachelor of Science in Dentistry: Dr. E. M. Fisher, Dr. A. W. Lindsay, Dr. V. M. Lloyd, Dr. H. J. Manchester, Dr. C. H. M. Williams.

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DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

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Editor, A. E. WEBSTER, D.D.S., M.D.S., M.D.

Honorary Dean, Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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Dominion Dental Journal

Vol. XL

TORONTO, JULY, 1928

No. 7

ORIGINAL COMMUNICATIONS

An Impacted Third Molar

A Predisposing Cause in a Case of Fracture of the Mandible.

BY DR. W. AUBREY CRICH, DENTAL DEPARTMENT, LOCKWOOD CLINIC, TORONTO.

Mr. F., Case No. 30628, aged 22 years, came to the Lockwood Clinic on January 30th, 1928, on account of pain and swelling at the angle of the jaw on the left side and inability to use his lower jaw.

HISTORY: On the afternoon of January 21st, he had been boxing and had received a heavy blow on the left side of his chin. This blow had lifted him off his feet, had dazed him a little but had not terminated the bout. His mouth had bled and he had spit out considerable blood. He experienced difficulty in eating that night but was able to move his jaw sufficiently to eat soft food. The jaw became more painful during the night and began to swell at the angle on the left side. Pain was not severe at any time, but the lower jaw became stiff and after a day or two he found that he could not use it, neither could he bring his anterior teeth together.

Several days later a painful swelling appeared in the bicuspid area on

the right side of the mandible. This drained and the pain disappeared.

EXAMINATION: The patient was a well-nourished individual. He had considerable swelling at the angle of his lower jaw on the left side and could not open his mouth on account of trismus of the muscles of mastication. The anterior teeth were not in occlusion, the greatest amount of separation being in the region of the first bicuspid on the lower right side. The lower posterior teeth were fairly well up in occlusion. On manipulation definite movement of the mandible could be seen between the lower right bicuspid teeth. Pain in this area, and also in the area of the angle on the opposite side, was increased by the slightest movement of the mandible. The lower right first bicuspid tooth was slightly loose. There were no areas of anaesthesia present, therefore no injury to the inferior dental nerves, nor any ecchymosis.

It was difficult to obtain a good

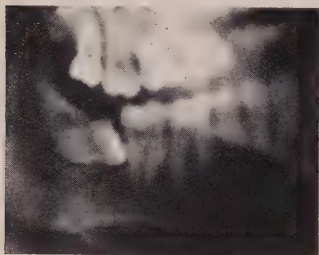
view of the lower left molar area but the third molar was seen to be missing. There was no break in the mucous membrane in this area.

DIAGNOSIS: With these clinical signs, a diagnosis was made of double fracture of the mandible, compound on the right side and probably simple on the left side.

Extra and intra oral X-rays confirmed the diagnosis. The fracture at the angle was seen to be complicated

Reduction of the fractures was advised after removal of the lower right first bicuspid tooth.

TREATMENT: The lower right first bicuspid was removed under local anaesthesia. The occlusion was studied and it was seen from the abrasion of the incisal edge of the central and lateral incisors that the patient's teeth had not been in perfect occlusion. This was interesting as the most certain guide for restoration of the fragments



3—An X-ray showing an impacted third molar lying in the line of fracture. The injury was the result of a blow received on the left side of the jaw during a boxing bout.

by an impacted third molar which was lying in a horizontal position, with its crown lying in the line of fracture. The X-ray showed that there was little displacement in this area. The line of fracture on the right side was shown just distal to the first bicuspid and extended down through the socket of this tooth.



4—An X-ray showing the fracture just distal to the second bicuspid which occurred on the opposite side in the case described in illustration No. 3.



1—Gilmer's Modified Method of wiring the lower teeth to the teeth of the upper arch in a fracture of the mandible.

to their normal position is the restoration and maintenance of the teeth in their normal occlusion. "Gilmer's Modified Method" of wiring the lower teeth to the teeth of the upper jaw was the method of choice. Fixation of the splints and reduction of the fractures is most satisfactorily accomplished under the influence of 1/6 gr. of Morphine Sulphate and 1/150 gr. of Scopolamine.

FIXATION OF SPLINTS: On February 1st splints in the form of arch wires of fourteen gauge German silver were made to conform to the buccal surfaces of the teeth in the upper and lower arches extending from the first molar on the left side to the corresponding tooth on the opposite side. The arch wires were annealed, polished and sterilized before being used. The ends of the upper arch wire were

bent downward to make a small loop in order to reduce irritation to the tissues, while the ends of the lower arch were looped upward. Twenty-five gauge German silver wire was used as "interlacing wire" to fix the arch wire to the teeth. The arch wire was fixed to each tooth in the upper arch from the first molar on the left side around to the corresponding molar on the opposite side. The interlacing wires were passed between the teeth above the contact point, one end being brought out below the arch wire, the other end above it. The ends of the wires were then twisted together and a pair of hemostatic forceps were used to tighten the wires, care being taken to draw the ends of the wires away from the tooth, thus avoiding breakage.

Final tightening of the wires was not done until all the wires were in position. A small pair of curved forceps was used to guide the ends of the interlacing wires through the interproximal spaces.

The ends of the twisted wires were cut rather short and then bent to form a small hook, the end being tucked under the arch wire. The lower arch wire was fixed to the lower teeth in a similar manner, the wires passing through the interproximal spaces below the contact points.

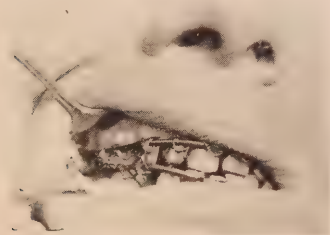
REDUCTION: Double thickness of interlacing wires were used as reduction wires. The reduction wires were passed under the arch wires in chosen positions so that when force and ten-

sion were exerted upon them the teeth would be brought up into their proper occlusion and the fractures reduced. (All the reduction wires should be in position before final reduction is made).

On tightening the reducing wires, the teeth came into occlusion. The ends of these wires were carefully bent in order to prevent irritation.

CARE OF THE MOUTH: The patient was advised to keep his mouth as clean as possible. A 50 per cent. solution of stock hydrogen peroxide provides a good mouth wash. A small tooth brush may be used to good advantage to prevent the collection of debris about the wires. Pledgets of cotton saturated with hydrogen peroxide should be rubbed over the teeth and mucous membranes twice daily.

TREATMENT: The lower cuspids being conical in shape, the interlacing wires on these teeth become loose in the course of a day or two and were removed. The removal of these wires did not effect the stability of the lower arch wires. Five days following reduction the patient experienced more swelling accompanied by pain at the angle on the left side. He was advised to apply hot, moist compresses over this area and to use a warm mouth wash. The swelling was greatly reduced the following day. On February 18th, the reduction wires were cut and the case studied. The patient was able to open his mouth about one half inch after practising a few minutes. Gentle massage was given in the fractured areas. Some of the interlacing wires were tightened and the reduction wires again replaced. On February 28th the splints were removed, and the patient was cautioned against using his jaw too vigorously. Following removal of the splints more swelling appeared at the angle of the jaw and the glands in the side of the neck felt hard on palpation. A small quantity of pus could be expressed from the gingival crevice just buccal to the second molar. Hot, moist compresses were



2—Side view showing the method used in wiring the lower teeth to the teeth of the upper arch in a fracture of the mandible.

applied to this area until fluctuation could be detected and then extra oral drainage was obtained. The wound drained for six days and then healed. Since that time the jaw has been functioning normally and the patient has had no discomfort.

DISCUSSION: This case is particularly interesting on account of the impacted lower left third molar. Local predisposing causes of fracture of the mandible are usually tumors of bone such as sarcoma or carcinoma, or even more often cysts, osteomyelitis, or gume, but in this case it was an impacted molar.

Before attempting reduction here, one had to decide what should be done with regard to this impacted tooth. The common rule is to remove teeth in the line of fracture. In order to remove this tooth some of the bony tissue overlying the tooth would have had to be removed. This would have meant weakening the short fragment and would also have caused considerable trauma to the tissues. This tooth could not have been removed without getting more infection into the wound, which would have interfered with healing. If the roots of the impaction had been lying in the line of fracture, the shock would possibly have caused the nerve of the tooth to die and the tooth would then have had to be removed. Loose teeth or roots in the line of fracture should always be removed. (Removal of this impacted tooth has been advised and will be done about six months later).

Nearly all fractures of the jaw are compound, hence usually become infected. Hot, moist compresses applied to the outside tend to combat the infection or cause it to localize. The abscess should be opened as soon as fluctuation can be detected. This is most satisfactorily accomplished under nitrous oxide. A general anaesthetic should never be given with the reduction wires in position. A small incision should be made in the skin and then a blunt dissection down to

the periosteum made with a pair of scissors. A few thicknesses of sterile rubber tissue placed in the wound will insure good drainage.

Although the fracture at the angle in this case was thought to be "simple," it no doubt became infected by seepage or saliva into it by way of the gingival crevice around the second molar. A culture taken from around the crown of an unerupted tooth such as this always shows the presence of a mixed type of infection. Slight swelling usually persists in these areas for a few months, and it is advisable to inform the patient of this fact.

Anyone who has not seen fractures treated by this modified method of Gilmer's might think that the interlacing wires would cause considerable trauma to the gingival tissue. This is not the case, and it is surprising to see how little irritation the wires cause. When the reduction wires are tightened they tend to draw the arch wires toward the occlusal surfaces of the teeth and hence the interlacing wires away from the gingiva.

If the ends of the wires are carefully bent and tucked under the arch wires, the lips and buccal membranes will not be irritated. If one is afraid of this, dental compound may be used to round over these ends.

Whenever there are a few sound teeth in the opposing jaw, this method, in my estimation, is the most satisfactory. These splints are easily placed in position, whereas the patient is caused much discomfort in taking impressions in order to make either swaged or cast splints. With this method of wiring it is possible to study the occlusion of the teeth at all times as there is no thickness of metal between the upper and lower teeth. This method also saves the patient money and as most fractures of the jaw occur in the poorer classes, this fact should be taken into consideration. In cases of nausea or sickness the reduction wires may be easily cut, the mouth opened and again reduced.

If one or two interlacing wires should break, they may be ignored, whereas with other methods of wiring they must be replaced. About 1 per cent. of all fractures recorded are of the mandible, while about 5 per cent. are of the maxilla. This case is a common type of fracture as the point of impact of the breaking force was situated midway between the two points of fracture. When there is a fracture at the angle the break is usually anterior from below upward and at an angle of about 60 degrees. The mandible is almost as frequently fractured in two places as in one place only, the fracture usually occurring on the opposite sides.

Fracture of the mandible most frequently occurs in the mental region. The bone in this area is weakened to a certain extent by the mental foramen and also by the peculiarly attenuated internal structure of the bone at this point. This position is also the middle of the curve in the body of the jaw. Other common sites are (I) the angle of the jaw, (II) between the angle and mental foramen, (III) symphysis menti, (IV) ramus, (V) condyloid, (VI) coronoid process.

It is never necessary to extract to provide for the passage of food in the case of the patient wearing interdental splints or where the upper and lower

teeth are wired together. Fluids and soft foods may always be taken either through places where teeth have previously been lost or behind the last molar. On the day following reduction, this patient reported that he could take fluids and that he had no trouble in taking cream of wheat, mashed potatoes, ice cream, etc. The patient was able to talk and had no difficulty making himself understood and was only away from his work for a few days. These patients usually lose a few pounds of weight the first few days after reduction, but ordinarily regain it within a week or two.

There is usually little difficulty in making a diagnosis of fracture of the mandible, but this is greatly facilitated when there are considerable teeth present, as malocclusion is one of the best clinical signs. Extra oral X-rays should always be taken of both sides of the mandible as frequently with a fracture of the body of the mandible one finds a fracture of the neck of the condyle on the opposite side.

REPAIR OF BONE: Union in healthy patients should occur between thirty and forty days and always occurs more promptly when the fragments are brought into proper juxtaposition and so retained.

Graduate Dental Nurses' Alumnae Association of Canada Convention

Miss Alta A. E. Aitken, President of the Toronto Dental Assistants' Association announced the opening of the Convention. She was pleased to welcome so many members to the first session.

She said, we have a new organization in the City of Toronto, the Toronto Dental Assistants' Ass'n., and any girl who had served a year in a Dental office, or taken up the Dental Nurse's Course was eligible for membership. The first year the membership fee was \$2.00, but next year it would be \$3.00, \$1.00 being for initiation. They had now 43 members and hoped others would join. It was the only way, especially girls from out of town, could become acquainted, and the more the organization grows the more recognition we will gain from the Dentists; they will appreciate the fact that we are important, some Dentists do not, others do. The Ass'n meets the first Monday of each month at W.C.T.U. at 8 o'clock p.m.

The President introduced Dr. A. E. Webster, who assisted by Miss F. Gertrude Whitehead, gave a Table Clinic on Sterilization.

Dr. Webster said dry heat is not nearly as efficient as wet for destroying bacteria, where it takes about 200 degrees Fah. for wet heat it takes 400 to 600 degrees Fah. for Dry Heat.

He said there was no surer way of sterilizing an instrument than putting it directly into a flame, but it is not used much because it destroys the instruments. Dr. Webster said sterilization by flame was going to come in vogue within the next 5 years, as practically all the instruments will be made of some material that can be

put directly in the flame. Dr. Webster spoke of sterilizing by dry air in a chamber, which had to be 400 to 600 degrees to be a success. Put towels, wipes, gowns, rolls, cotton, etc., in a cover, and place in an oven, when the outside looked scorched and browned a little take it out. It takes about 2 hrs. for an ordinary packet put in the oven of the kitchen stove to be sterilized. Dr. Webster used this method for years. Boiling water sterilization method cannot be used for dry cotton, etc.

Dr. Webster urged the nurses to see that cotton dressings were sterile, that those put up by firms, although sterile at the time did not always remain so, not to depend on sterilization by proxy as it were. Do not neglect the importance of seeing it is sterile yourself.

He then spoke of sterilization by steam, taking 15 to 20, or 30 minutes. He mentioned the different sterilizers which are used and advised the nurses to use their own judgment as to their efficiency, as the articles on how to use them were written by a man who had perhaps gone around seeking information on how they worked mechanically.

There are other methods, such as chemicals, such as alcohol, phenol, bichloride of mercury, lysol, etc., but said the use of drugs in sterilization was not a success for dental work.

Speaking of the sterilizer, Dr. Webster showed the nurses three trays, in the top tray were the ordinary dry dressings, etc. used in dental practice. In the second tray was an outfit for prophylaxis treatment. The outfit for prophylaxis treatment. These instruments go down deep into and very great care must be taken in seeing they are sterile. In this tray

was also pumice in a folded drinking cup to be kept sterile. In the third tray was root canal operation instruments.

Miss Whitehead showed the nurses how to prepare the cotton, etc., for placing in the sterilizer. She mentioned using paper serviettes for the trays, etc., and showed the best method of folding them. She also showed how to wrap the cotton, etc. in the paper serviettes and how to remove them, keeping them sterile. Also told the nurses in pinning the pocket always to remember to only leave the head of the pin showing. The reason is when the pin is put through it becomes contaminated and once it is pulled through the sterile dressing, the dressing is no longer sterile. The instruments used for unfolding the sterile packets are kept in a solution 4 per cent. formaldehyde and boracic, with a little soda to prevent rust, this should be changed every other day at least.

11 A. M. *Dr. Wendell T. Holmes.*

Dr. Holmes said the first thing to remember was that X-Rays are the process whereby we get the shadow of the tooth or object on the film. He mentioned making it as pleasant as possible for the patient when he comes into your office, as it goes a long way towards success. He said a few years ago there was such a lot of talk about burning, etc., with the X-ray it made people afraid. If the patient relaxes the muscles of the jaw it is much easier to get the film in place. If the patient is nervous they hold the muscles tense. He spoke of the necessity of removing metal rimmed glasses, removable bridges, etc. for reason there is a certain reflection which often fogs the film. The doctor explained the correct position of the patient for taking X-rays. Experience is the only teacher. The dental nurse may become as efficient as the dentist in taking the X-rays. Before you place the film in the patient's mouth test out the machine for voltage. See you have plenty of films on hand. To do a

full mouth it takes anywhere from 11 to 17 or 18. It is your duty to see there are different size films. The doctor mentioned especially in a town it was desirable to take X-rays of different parts of the body, with exception of perhaps the chest, stomach, etc. He said the head is the hardest part of the body to get an exposure of.

He then spoke of developing the films and said perfectly good films could be spoiled in developing. Said it is wise to use chemicals manufactured by the firm whose films you are using, and always keep a fresh supply, buy in small quantities and have fresh. He explained the necessity of keeping the developer and the fixing bath fresh so they will do the work properly, and also to be very careful regarding the temperature. Advised use of thermometer to determine temperature of bath. Spoke on the importance of washing the developer properly off the films, developer left even under the small clips will run down on the film and cause a streak. Streaks often caused also from bending the film.

The doctor mentioned the importance of keeping the office clean, that dust on the film will cause a spot.

Spoke of making the films in duplicate and keeping one on file, mounting the other.

12.15 *Luncheon.*

Mr. McTavish asked the blessing.

Mr. Alta A. E. Aitken read a message of greeting from Miss Southard, President of the Dental Assistants Association in the U. S.

Mrs. Beth Arnott Ellis, and Mr. Harvey Doney accompanied by Miss Jean Collins, both sang numbers which were greatly appreciated.

Miss Aitken extended the thanks for the Toronto Dental Nurses to Mr. McTavish of the National Refining Co. for the luncheon and for the beautiful bouquets of flowers given those taking part.

Mr. McTavish introduced the speaker Mrs. Groves of the Board of Edu-

cation, who said she was delighted to be able to come and meet this worth while group of young ladies. She was glad to learn of the work being done by the Association. She said Canada is a land of tremendous potentialities and thinks we are fortunate to be living here at the present time. It has been said there is a pot of gold at the foot of every Canadian rainbow but we must work to attain it. Pleased to know this organization is working along the right line in having a Canadian organization and thinks it is splendid to be able to meet together and talk over our problems. She said that only that day dawns to which we are awake, and that in Canada we have opportunities all the time for work and advancement.

June 4th—2.30 P.M.—*Dr. A. D. A.*

Mason, General Office Routine.

Dr. Mason said it is only a few years since the Dental Nurses' Association was formed, but it has certainly raised the status of the Dental Office all over the province, and the influence is going to be felt much farther than our own province. He told the girls it is just what we put in our work that we get out of it; we reap exactly what we sow. He said he would like to leave the thought with the girls that their salary cheque depended on the success of that Dental office, and the service given by the dentist, and his services can be increased so much by the dental nurse. Your salary cheque does not come from the dentist, it comes from the success of that dental office.

Many patients get a wrong impression of the value of the service that is rendered to them, they feel they should pay less money, are being overcharged. Dentist's fees are not high, very few dentists ever get wealthy and it is the duty of the nurse to assist in getting the patient to realize the value of the work and appreciate it.

He said that possibly the most important thing that is required of the nurse is tactfulness, that means a lot,

size up the situation with reference to the other person as well as yourself. Use the Golden Rule, always put yourself in the other fellow's position. Dr. Mason said he knew of no way a Dental Nurse could be of more assistance than in being tactful in handling the public.

To be tactful study your own personality. External personality is only an impression of what you have made yourself inside. Some patients are very reasonable and must be met on the same ground, nervous people need more attention and more tact in handling them; if you fuss over one type it turns them away, if you don't fuss over another they won't come back.

Be able to read character, this is very important in the dental office. Must be able to size up people who come in to get service and not pay for it, also keep agents from wasting the time of the dentist. The nurse must be able, in a tactful way to find out just what the business the person has with the dentist, and get rid of them in a nice way. He mentioned people who are sick requiring a little more sympathy, some have a real dread of the chair and often the sympathy of the nurse carries the operation through more successfully. The dentist's progress is retarded if the patient resists. He spoke of the importance of having complete anaesthesia thus enabling the dentist to put the instrument in the proper place. After an operation he spoke of telephoning the next day and just asking how the patient was getting along.

Dr. Mason spoke of the importance of cleanliness in the dental office, see that the office is free from dust, no intention of the dental nurse being char woman, but see that the place is kept clean. See that the floor and everything is clean. See that the curtains are not full of holes and dirty. Dr. Mason said a second rate dentist with a clean office would have more success than a first rate dentist with a dirty office. Cleanliness is routine

work of the dental nurse which must be looked after.

Dr. Mason spoke of the dental nurse attending to the doctor's bank account and keeping the books, also keeping the collections up to date. Use brains in asking people for money.

He spoke of assistance at the chair and warned the girls never to gape at a patient, be as refined as possible under these rather delicate situations.

Miss Bender of Montreal told the nurses their association had only been organized about two years and they meet once a month in McGill College for lectures by some of the dentists. Sorry more of the girls could not have come to this convention.

3.30 P.M. *J. C. Liverett, Dept. of Public Health, Children's Work in Dentistry.*

Dr. Livett told the nurses the whole business is just one of common sense. He mentioned Dr. Evangeline Jordon's book on Operative Dentistry for children being well worth the girls' reading.

He told the girls not to get discouraged if they found it difficult at first to get along with children. He said he felt the same way before he began to study children and now he would rather do work for a child than an adult. He can get their confidence and get them to do the things he wants them to do better than adults. He said the dental nurse is a very great aid in dealing with the children. Do not forget when a child comes in to the office that he or she is an individual, a person or human being. The character is just being formed, particularly with young children and they are being subjected to new experiences. He mentioned the nurse having to be very tactful in dealing, especially with some of the parents.

Think of the child as a human being with five senses, sight, hearing, smell, taste and touch.

Sight, first impressions very important, let the child get the idea you

want to do everything to help him, get his confidence, receive him with a cheery smile. Don't let a child see another little fellow coming out crying, for he knows he is going in next.

Hearing—Don't let a little patient hear another crying, one perhaps under an anaesthetic. Whispering between the dentist and nurse very bad, think some plans are being formed regarding him. Hearing experience of grandmother or some one older having had all their teeth out, etc.

Smell, Drugs—an adult will tolerate them but bad for a child.

Taste, Drugs—a child knows from experience that heat burns. If oil of cloves going to be used, better to say this is hot but won't burn.

Touch, Fear—Most dentists tell a child when he is going to hurt. Nothing more fatal than get the confidence of a child, tell him something is not going to hurt, then immediately do something that does hurt. See that instruments are sufficiently cool.

Try to prevent a child gripping the arms of a chair, the whole body becomes keyed up and intensifies pain.

Dr. Livett mentioned the importance of proper diet, such as fruit, green vegetables, whole wheat bread, milk, etc.

Miss F. Gertrude Whitehead, Con-
venor of the Convention, told the girls they had worked for weeks on this convention and next year hoped to start earlier. Glad to see the large attendance this year and hope to have them with us again next year.

10 A.M. June 6th—*Dr. Conboy, Director of Dental Services for Ont.*

Dr. Conboy said he did not need to impress the importance of personality, which makes it possible to render real service in life. Today we are emphasizing as never before the importance of physical health in regard to personality. A person who does not enjoy good health cannot render his or her full service to humanity.

Mental shows itself in the ability to think, to remember and imagine. Get a vast store of knowledge, get knowledge by experience, and by reading the proper material.

Memory, store up a lot of information and knowledge.

Imagination enables you to do everything you do except mere feats of memory.

Volitional power is the thing that enables us to do things. You might have all the knowledge and physical strength in the world, and still be helpless without this power.

Dr. Conboy told the nurses to make the nervous system their ally instead of their enemy, make sure to work with your nervous system.

Regarding habit, Dr. Conboy said if you are going to have to do a thing often, be sure and do it properly the first time.

Moral influence by will power. Strength of character depends on three things, heredity, environment and will power.

Be master of your own will.

If you cannot arrive at a decision with the information you have do not act until you get the necessary information and knowledge in your possession and arrive at your decision intelligently. Don't worry today about your failures of yesterday, if you have done your best there is no cause to repine. In making your decision do not allow your likes and dislikes to come in, do it in a judicial way.

Regarding breaking bad habits, which has to do with volitional power, it is far easier to put a good habit in the place of a bad one than to try to curb the bad habit.

The president gave a vote of thanks to Dr. Conboy for his very helpful address, which was appreciated by all.

11 A.M. June 6th—*Dr. A. W. Lindsay—Dentistry in China.*

Dr. Lindsay told how the West China Union University is supported by five

different churches, the Anglicans and friends, or Quakers in England, the Methodists and Baptists in U. S. and the United Church in Canada.

He stated it had been said dentistry was a luxury and should not be sent to China. They would allow a medical man in China, but all missionaries, etc., have to study the language for two years after they get there.

When he first began his work in China he was told no woman would be permitted to come to the dentist. However, a doctor's daughter was treated for some very serious trouble soon after Dr. Lindsay's arrival there, although it was not supposed to be known. Then the Governor's niece had the same trouble, and he was requested to appear at the home of the Governor. It was impossible to do anything for her there and finally it was decided to bring her to the medical centre and each day she was brought in a procession to be treated, then people began to say if she could be treated why could not they have the same attention. The Doctor's quarters were at first on the 4th floor, but finally in 1911 he was allowed money to build on the ground and then in 1919 the building was enlarged by another story.

He soon discovered he could not do much alone and asked for another dentist, then soon they began training dental mechanics. Then they decided they needed help in the operating room and decided to have chair assistants. Trained some of the dental mechanics to do work at the chair.

Dr. Lindsay regrets that they have only men in China to do the work of the dental assistant. He has been trying to get the W. M. S. to send out a lady dentist and then she would perhaps be able to train girls to do the work of the dental assistant, as the men are not successful as dental nurses, lacking in sympathy, and the touch of a woman's hand.

12.15 P.M. *Round Table Conference;*
Miss E. B. Tuck.

"How can a dental nurse increase and improve the practice of a modern dentist?"

Every dentist is anxious to increase and improve his dental practice. The dentist relies on his nurse for sterilization and surgical cleanliness. When this is carried out in the operating room it only follows it will be found in the lab. and in the reception room. This is one means we have found out in our discussion of improving the dentist's practice. It not only pleases the patient but he goes out and tells his friends.

Economy of time and material, we found was a sure way of increasing his practice. This can be done by always having the doctor's hand piece oiled, saving time. Another way, have his instruments always in their proper places, sterilized and ready for use. Being careful to measure materials so none is wasted. Some one mentioned that the doctor's time means money and we can conserve his time by looking after his books, keeping his accounts in good order, and in a tactful way take messages for the doctor from people on the telephone and not bring him to the reception room unless absolutely necessary.

By receiving and dismissing patients.

By purchasing supplies.

By chair side assistance.

In concluding she said that the dental nurse creating a pleasing atmosphere, and herself acting as a welcoming hostess, a patient could not help but enjoy a visit to such an immaculate dentist's office.

2.30 P. M. *Dr. Thaddeus P. Hyatt.*
Preventive Dentistry.

The Dr. gave a very interesting talk on his work in New York.

He said in New York they have the dental assistant and the dental hygienist. The dental hygienist makes the examination for the dentist and cleanses the teeth, but does no routine work in the office. He expressed the wish there was a law here to permit the dental nurse making the examination the same as they have it in New York.

He told at length of his work at the Metropolitan Life Insurance Company through which he has obtained very important figures, such as the number of teeth lost between 30 and 40, 40 and 50 and so on. He mentioned the insurance companies having a mortality table according to which they fix their premium rates, and now they have a table concerning the teeth.

The Dr. explained there were 160 grinding surfaces in a full set of teeth. He spoke of the great importance of locating and filling the very tiny pits and fissures.

Dr. Hyatt said he was delighted with what he had found at this convention, he came expecting to have a pleasant trip but did not think it was going to mean such a lot and give him such wonderful ammunition to take home. He said he could drive in his car 22 miles from his home and not be out of the city limits in New York, yet in the health dept. here they have more dentists and dental nurses than in New York where they have 10 dentists and 25 dental hygienists. He is going to fire this at the New York civic officials when he gets back and ask for far more money and nurses, dentists, etc. than he included in his budget.

He stated the best preventive dentistry we can do is dentistry for children.

Dr. Hyatt remarked when the boys went from America to England during the war the English people made such a fuss over their teeth, after marching it was not unusual to see the soldiers standing along the street with people asking to see their beautiful

teeth. The Dr. said he paid little attention when that appeared in the American papers, but it awoke England and the British Government appropriated £2,000,000 for mouth hygiene in England.

The Dr. mentioned that in an ordinary clean mouth there were 5,000,000 bacteria, and in an unclean mouth 800,000,000.

Dr. Hyatt extended an invitation to any of the dental nurses from Toronto visiting New York, to come and see him and that he would be delighted to have them at the Metropolitan Insurance Co. to see how they do their work there.

The President thanked Dr. Hyatt on behalf of the dental nurses.

4-6.30 Afternoon Tea in the Blue Reception Room, Compliments of Goldsmith Bros.

Mrs. Costello and Major Norman Alexander sang, accompanied by Mr. Plant.

Mrs. Frank Martin sang accompanied by Miss Jean Collins.

Mrs. Beth Arnott Ellis sang, also accompanied by Miss Jean Collins.

Mrs. Norman Alexander and Miss F. Gertrude Whitehead poured the tea.

Miss Alta. Aitken, President Dental Assistants' Association, received the dental nurses, assisted by Miss Anna Lindsay, Social Convenor and Miss Jean Lang.

The tea was very much enjoyed by all the dental nurses.

The Canadian Dental Hygiene Council

The Annual General Meeting of the Council was held at noon on Thursday, June 7th, at Casa Loma Hotel, Toronto.

Dr. W. C. Trotter presided, and there were present Col. G. G. Na-smith, Dr. Thaddeus P. Hyatt, Metropolitan Life, New York; Mr. N. L. Burnette, Metropolitan Life, Ottawa; Mr. John Appleton, Dr. Eudore Dubeau, Dr. Wallace Seccombe, Dr. A. E. Webster, Dr. Gordon Bate, Mr. James E. Simpson, and a number of others including the following representatives from the various provinces:

British Columbia: Dr. Emory C. Jones.

Alberta: Dr. John Clay.

Saskatchewan: Drs. J. A. Brett, Lorne C. Fasken, and McDougall.

Manitoba: Drs. Clarke, Garvin and J. F. Morrison.

Ontario: Drs. A. W. Ellis, F. C. Husband and J. C. Livett.

Quebec: Dr. Mowry.

New Brunswick: Dr. Jas. M. Magee.

Nova Scotia: Drs. G. K. Thomson, Stanley Bagnall, Ritchie, Faulkner and Oxner.

Prince Edward Island: Dr. F. Smallwood.

In opening the meeting, Dr. Trotter explained that the president, General Mewburn was unable to be present, having important engagements in Montreal and Ottawa. It had been expected that Mr. E. E. Reid, the Vice-President would be on hand to take the chair, but unfortunately, his brother-in-law, the President of the London Life Insurance Company, had died suddenly the previous day, and therefore it was impossible for him to be present

and the duty of presiding therefore devolved on Dr. Trotter as Chairman of the Executive.

The Secretary next read the notice calling the meeting, and replies expressing regret at inability to attend, from Hon. S. C. Mewburn, Hon. J. E. King, Minister of Health, Ottawa; Dr. J. A. Amyot, Deputy Minister of Health, Ottawa; Dr. J. W. Bell, Deputy Minister of Health, Ontario; Dr. J. L. Biggar, National Commissioner, Canadian Red Cross; Henry E. North, Third Vice-President, Metropolitan Life, Ottawa; K. E. Atkinson, Toronto Daily Star, Dr. T. T. Routley, Dr. Harvey Agnew, Dr. A. Primrose, Dr. C. M. Hincks and others.

The next order of business was reading of minutes of last Annual Meeting. As these minutes have been published and distributed to every member, it was moved by J. A. Bothwell, seconded by S. Bagnall, that they be taken as read. This was Carried.

The Secretary then presented the Financial Report, and moved its adoption, seconded by W. E. Willmott. --Carried.

The report of the Executive Committee was presented by Dr. Trotter who moved its adoption. This was seconded by Dr. Seccombe and carried.

Dr. Thomson, as field Secretary of the Council, reported on the Saskatchewan Campaign. He declared that every objective set in last year's outline of future activities had been accomplished and more. He summed up the big work in Saskatchewan by saying that from February 20th to April last, every man, woman and child in that Province took a course in mouth health and preventive den-

tristry. "We asked Saskatchewan for co-operation and we got leadership. The Campaign fairly ran away with us." He described in detail and with both comedy and pathos the growing enthusiasm that met his efforts and the incidents of the Campaign. To the dentists of the province, he gave credit for 100 per cent. co-operation. "The Government of Saskatchewan made the dentists feel that they were philanthropists in putting on the Campaign," he said. To the Departments of Health and Education he was particularly complimentary, and with one exception the newspapers of the Province had supported the effort wholeheartedly. The children for whom it was designed he said were "On their toes for it."

As a result, he stated, that now legislation had been enacted empowering any municipality to bring in a doctor or a dentist for curative or preventive measures, and that the Saskatchewan Department of Health was going to establish a dental department with a full-time director in charge.

Dr. Thomson moved the adoption of this report, which was seconded by Col. Nasmith and enthusiastically Carried.

Dr. A. J. Brett, representing Saskatchewan, was warm in his praise of Dr. Thomson's work, and kept the gathering laughing by his description of some of the lighter incidents of the Campaign.

Dr. Thaddeus P Hyatt, representing the Metropolitan Assurance Association of New York, declared, "I am not alone filled with amazement but with deep admiration for the work of the dental profession in Canada. I am at a loss to know why they wanted me to come here. I have learned as much or more than I have been able to teach. Nowhere in thirty years, of experience have I met a group of men so successful in their own efforts and in addition so successful in securing the co-operation

of other bodies and organizations". He offered the suggestion that the Insurance companies doing work of an investigatory nature should co-operate with the dental faculty of the university, for the compilation of data with regard to the effects of the dental hygiene upon general health.

Dr. Eudore Dubeau, Dean of the Faculty of Dentistry, at Montreal University, outlined plans now under way, for educational work in Quebec, and stated that the greatest fight in that Province had been against the advertising quacks but that the last of these had been conquered, and the way opened for progressive educational work.

James Simpson brought the congratulations of the Trades and Labor Congress of Canada and pledged its aid in any way that it could co-operate for the betterment of health of the people.

RESOLUTIONS:

Col. Nasmith moved a vote of thanks to various organizations which have assisted the Council during the past year. Especially the Dominion Department of Public Health, for their grant of Five Thousand Dollars renewed again this year. The Canadian Life Insurance Officers' Association, for their grant of Two Thousand, Seven Hundred and Three Dollars and Sixty-five cents (\$2,703.65), towards the cost of printing booklets. To the Metropolitan Life Insurance Company, for the loan of Films and other assistance in Saskatchewan Campaign. To Canadian Oral Prophylactic Association for loaning the services of Dr. Harry S. Thomson. To the Ontario Dental Society, for their grant of Three Hundred Dollars. The motion was seconded by Dr. Reid and Carried.

Dr. Geo. Grieve moved a hearty vote of thanks to the Canadian Red Cross Society, for renewing their grant of Two Thousand, Five Hun-

dred Dollars again for next year. In moving this, he praised the services of the Red Cross representative on our Council, Col. G. G. Nasmith who had been a tower of strength to the Executive. The motion was seconded by Dr. Dubeau and Carried.

ELECTION OF OFFICERS:

Dr. Dubeau moved that the present officers be reelected. Seconded by Dr. Ellis. There being no further nominations, the motion was carried.

ELECTION OF EXECUTIVE:

Dr. Dubeau moved that the present Executive be re-elected with power to add, up to the number of twenty. There being no further nominations, the motion was seconded by Dr. Grieve and Carried.

APPOINTMENT OF AUDITORS:

Dr. Grieve moved that the present Auditors: Thorne, Mulholland, Hewson and McPherson, be re-appointed. Seconded by Dr. Willmott and Carried.

There being no further business, the meeting adjourned.

Report of the Canadian Dental Hygiene Council Executive Committee, For Year Ending May 31st, 1928:

Thanks to the financial assistance given the Council by the Dominion Government and the Canadian Red Cross Society, your Executive Committee is able to show more concrete results from its labors of the past year, than for any of its predecessors.

In addition to carrying on our customary duty of providing educational material such as lantern slides, moving picture films, outline lectures, charts, pamphlets, etc., for use throughout Canada, this year we have devoted most of our time and resources in assisting the Saskatchewan Dental Society carry out a province-wide mouth health campaign which has probably never be-

fore been equalled either in scope or results.

Our Field Officer, Dr. Harry S. Thomson, spent more than three months out in Saskatchewan devoting the whole of his time to this work, and succeeded in securing the complete co-operation of the dentists and physicians, the Provincial Government, the Departments of Health and Education, the Director of School Hygiene, the Director of Publicity, the Provincial Red Cross Society, the Newspapers of the Province, the School Principals and Teachers, the Social Service Clubs and many other organizations.

We are deeply indebted to all these organizations and more particularly to all the Saskatchewan Government officials including the Hon. Dr. Uhrich, Minister of Health, Dr. Middleton assistant Deputy Minister, Dr. Seymour, special advisor to the Department, the Hon. Dr. Gardner, Minister of Education and Mr. Ball, his Deputy Minister, also to Miss Ruby Simpson, Director of School Hygiene for the Department of Education and to Commissioner Marshall of the Provincial Red Cross Society, and also to Mr. W. J. Kerr, Director of Publicity for the Province.

It seems to be the unanimous opinion of all organizations, officials, and individuals throughout the province that the outstanding success of the whole Saskatchewan undertaking was a tribute to the organizing genius and personal magnetism of our Field Secretary, Dr. Harry S. Thomson, who seems to have inspired enthusiasm and optimism in the soul of every one with whom he came into official contact. Dr. Thomson visualized the possibilities of such a campaign as this, and had the energy and determination to organize and carry it through. To do this he had to harmonize many conflicting interests and consolidate and organize the various interests of

a whole Province and in that he succeeded beyond our fondest dreams, he has earned the unstinted gratitude and praise of this Council.

The outstanding result of the Saskatchewan Educational Campaign was the assurance of the Minister of Health, that some action would be taken towards the creation of a department of Dental Health, and the appointment of a full time Director of Dental Services. The Minister has also promised that organized dental services will be provided in Provincial Mental Hospitals and other Government institutions.

The Saskatchewan Provincial Department of Public Health provided and distributed 35,000 booklets entitled "Mouth Health", specially prepared for them by this Council. Ten thousand of these were in the Ukrainian language. Through the generosity of the Canadian Life Insurance Officers' Association, who contributed \$2,700.00 we were able to supply sixty-five thousand special booklets entitled "At the Gate", and "The Joy of Living" respectively. We also have to thank the Metropolitan Life Insurance Company, for loaning us two moving picture films. The council had calculated on not spending more than \$3,500.00 in Saskatchewan, but by the time all accounts are paid, I fear this sum will be exceeded.

The Saskatchewan Campaign has again demonstrated to the enormous value of the goodwill and co-operation of the Canadian Red Cross Society. The personality and organizing ability of Mr. Marshall, the Red Cross Commissioner for Saskatchewan was invaluable to us. We are most grateful to the Red Cross Society for another donation of \$2,500.00 towards our next year's budget. I am also glad to announce another grant of Five Thousand Dollars (\$5,000.00) by the Dominion Government. These contributions should enable us to duplicate our

efforts of the past year, and to accomplish something big in the way of mouth health educational work. The Canadian Oral Prophylactic Association continues to loan us the services of Dr. Harry S. Thomson whose time this past year has been almost exclusively at our disposal otherwise we could not have had anything like the success we have had. I would suggest that this meeting take some official recognition of all the favors we have received from these different sources.

We have been very fortunate in getting the consent of Dr. Alan Brown, the well known Pediatrician to become a member of the Executive. His opinion in regard to the influence of diet on the teeth and the general health of the mouth and the effect of mouth conditions upon the general health should make him a most valuable addition to our committee.

During the year we have assisted in organization work in some of the other Provinces and there are opportunities awaiting us for further work in these provinces. From among these, Manitoba has come forward with a specific invitation for us to assist them in some sort of a Mouth Health Campaign, and we should give this suggestion careful consideration.

I am glad to say that we have present with us at this Annual Meeting, Drs. Brett and Fasken of Saskatchewan, who were in charge of the organization of Dentists in that province, which guided and controlled the recent Educational Campaign. These two gentlemen spared neither time nor money in order to ensure the success of the work which they had undertaken, and we can assure them that we appreciate the sacrifices they made and the results they attained.

The Executive Committee have been unable, as yet, to work out any satisfactory plan for the examination

and care of the mouths of immigrants. The situation has become still more difficult, owing to the change the Federal Government has made in having intending immigrants

medically examined in the Old Country, instead of in Canada.

Respectfully submitted,

W. CECIL TROTTER,
Chairman, Executive Com.

The Canadian Dental Hygiene Council Secretary's Report and Financial Statement

In presenting the Financial Statement, I would like to make a few explanations. The Red Cross grant of Two Thousand, Five Hundred Dollars (\$2,500.00) received last year, is not included in this Statement, as it was received early in 1927, and appears on the previous statement. The balance on hand at the beginning of the financial year, is part of this grant. I would also like to draw attention to the fact that while the statement shows a balance on hand at the end of the year, of Seven Hundred and Twenty Nine Dollars and Fifty Three Cents (\$729.53), yet there are outstanding accounts of Five Hundred and Eight Dollars and Ten Cents (\$508.10), so that the net balance after the year's work, is Two Hundred and Twenty-One Dollars and Forty Three Cents (\$221.43).

While the statement only covers actual receipts and expenditures of money, yet, if a cash valuation could be placed on such contributions as the assistance of the Metropolitan Life Insurance Company, in loaning the services of Dr. Harry S. Thomson, our budget would total about Fifteen Thousand Dollars.

STATEMENT OF RECEIPTS AND DISBURSEMENTS

(Year ending May 31st, 1928)

Receipts

Cash in bank, June 1st,
1927 \$ 1,991.25

Dominion Government Grant	5,000.00
Ontario Dental Association	300.00
Canadian Dental Research Foundation, Rent	100.00
Canadian Life Insurance Officers' Association, Grant re Booklets ...	2,703.65
Sundry Revenue	2.99
	\$10,097.89

DISBURSEMENTS:

Saskatchewan Campaign Education Material (not including proportion used in Saskatchewan Campaign)	3,729.66
Secretary, Honorarium .	1,983.88
Proportion of Field Secretary's Salary	1,033.32
Travelling Expenses ...	1,500.00
Rent	472.52
Stenographic Assistance Stationery, Postage and Telegraphs	300.00
Audit Fee	286.98
Annual Meeting	20.00
	\$9,368.36

Cash on hand, and in bank, May 31st, 1928 729.53

\$10,097.89

Note: The unpaid Accounts amount to \$508.10.

Audited and Approved—Thorne,
Mulholland, Howson and McPherson
—Chartered Accountants.

STATEMENT OF EXPENSE RE
SASKATCHEWAN CAMPAIGN
(Year ending May 31st, 1928)

Field Secretary, Travel-
ling and other ex-
penses \$882.42
Saskatchewan Central
Committee Expenses . 190.80

Free Travelling Dental
Clinic 692.95
Essay Prizes 110.00
Educational Material,
Proportion used in
Campaign 1,703.49
Sundry Travelling Ex-
penses 150.00

\$3,729.66

Respectfully submitted:
EDMUND A. GRANT, Sec.-Treas.

International Association for Dental Research

First General Session

Report of the first session of the
Sixth Annual Meeting of the Interna-
tional Association of Dental Research
held March 25, 1928, in the Mayflower
Hotel, Washington, D. C.

President in the chair welcomed the
members, guests and friends, and ex-
tended the privileges of the floor to
all.

1. Communications were presented
and discussed as follows:

Dr. Kelsey presented Dr. McCollum's
paper on skeleton development among
swine. Discussed by Gies, Miner,
Howe.

2. J. T. Appleton, Root Development.

3. Dr. H. Klein, Changes in the
Electrical Resistance Across the En-
amel as a Measure of Permeability to
Salts. Discussed by Webster, Bodeck-
er, Klein, McCall.

4. J. O. McCall, Variations in the
Periodontal Structures of Erupting
and Recently Erupted Teeth, as Dis-
closed by the Roentgenogram. Dis-
cussed by Dr. Orban.

5. Egon Neustadt, Bone Changes
and Their Significance. Discussed by
Dr. Orban. Closed by Dr. Newstadt.

6. Dr. Rice read the paper of Dr.
Daley, Studies of Vincent's Angina.
Discussed by Merritt, McDonagle,
Appleton.

Meeting adjourned at 5 p.m. and
called to meet again at 8 p.m., March
25th.

Second General Session

The second session of the Associa-
tion was held in the Mayflower Hotel,
March 25, 1928.

The President called the meeting to
order at 8.30 p.m. and asked

1. The Vice President to take the
chair while he read his Presidential
Address. The discussion of the Presi-
dent's address was opened by Dr.
Waugh and closed by Dr. Noyes.

2. Dr. Hyatt and Dr. Lotka pre-
sented a paper on the manner of secur-
ing dental statistics by the Metropoli-
tan Life Insurance Company. Discus-
sion by Merritt, Dettifsen.

3. Dr. Marcus L. Ward gave a syn-
opsis on some work done on the fati-
gue of metals. Discussed by Souther;
closed by Ward.

4. Dr. Kaethe Dewey showed many
slides illustrating pathological ab-
sorption of bone.

5. Drs. McKay and Kempf, exhaust-
ive discussion of mottled enamel.

6. The report of the Council was laid on the table for action later.

Council Report

The first regular official meeting of the Council of the International Association for Dental Research was held in the North Room of the Mayflower Hotel, at 10 a.m., March 25, 1928.

The President and other officers all present.

The special Organization Committee presented its report in detail. The chairman of the Committee will report to you at this session.

Resignations

The resignation of Dr. C. G. Darling, Ann Arbor, and Dr. Guy W. Clarke, San Francisco, were accepted.

The death of Dr. Pessio, New York, was reported.

Appointment of Members

Appended hereto are the names of those applying for membership in the Association. The list has also been distributed among you for your consideration and adjudication upon at a later meeting.

INTERNATIONAL ASSOCIATION FOR DENTAL RESEARCH

Complete List of Nominations to membership, as received by the Committee on Organization

Ann Arbor—Faith Parmelee Hadley.
Baltimore—E. V. McCollum.

Boston—Charles E. Hatch, Ernest A. Hooten, Philip A. Leavitt, Fred W. Morse, Benjamin Spector, Harry Trimble.

Chicago—Lloyd Arnold, Olaf Bergeim, J. R. Blayney, Edgar D. Coolidge, G. R. Lundquist, H. A. McGuigan, Emil Mueller, Anna C. Nichols, B. Orban, W. F. Peterson, B. O. Sippy.

Cleveland—Samuel W. Chase, Frederick C. Waite.

Indianapolis—Sherman L. Davis.

Louisville—Theodore B. Beust.

Minneapolis—Elmer S. Best, Erwin Epstein, Boyd S. Gardner, Carl J. Grove, Herman A. Maves, Fred L. Meyer, George S. Monson, William D. Vehe, Carl W. Waldron, Daniel E. Ziskin.

New York—Malcolm W. Carr, James M. Inouye, Maxwell Karsham, Frances Krasnow, Harold J. Leonard, John Oppie McCall, Frederick S. McKay, Alfred Owre, E. G. Miller, Jr., B. W. Weinberger.

Philadelphia—J. L. T. Appleton, Jr., Carrie Kirk Bryant, J. A. Detlefsen, Robert H. Ivy, Joseph McFarland, John V. Mershon, William R. Pentz, Hermann Prinz, Arthur Hopewell Smith.

Pittsburgh—Thurlow W. Brand, F. C. Friesell, H. E. Friesell, William F. Swanson, Lawrence E. Van Kirk, Walter H. Wright.

Rochester (N.Y.)—Philip Jay.

St. Louis—B. E. Lischer, E. B. Owen, Clarence O. Simpson, George B. Winter.

Toronto—Thomas Cowling.

The Council recommended that the office of Honorary President be abolished and the office of President-Elect be created.

Nomination of Officers

Because of the withdrawal of one of the candidates from the list of nominations the informal mail ballot had to be abandoned.

The following nominations are presented for your approval or rejection.

President—Dr. L. M. S. Miner.

President-Elect—Dr. A. D. Black.

Vice-President—Dr. F. V. Simonton.
Secretary—W. J. Gies.

Treasurer—William Rice.

Third General Session

The Third General Session was held in the Mayflower Hotel March 26th, at 8.30 p.m., Vice President Bunting in the chair.

1. B. Orban, Chicago, presented the stages of tooth development.

2. Dr. J. A. Detlefsen, gave a talk on the influences of heredity and environment on tooth and arch peculiarities. Many diagrams and drawings were presented to illustrate the value of each factor of influence.

3. C. F. Bodecker, Bactinal destruction of enamel.

4. Dr. Sherman L. Davis, Nutritional disturbance associated with pyorrhea.

5. Dr. Sterling V. Mead, Chronic Osteomyelitis.

6. Dr. Martha R. Jones, Effects of faulty diet during pregnancy of brood bitches and the skeletal and dental development of their offspring.

7. Business session.

That part of the Council's report abolishing the office of Honorary President and establishing the office of President-Elect was concurred in by resolution.

The officers for the ensuing year were elected as follows:

President—L. M. S. Miner; President Elect—A. D. Black; Vice President—F. V. Simonton; Secretary—W. J. Gies; Treasurer—William Rice.

The following applications for membership were laid on the table:

Drs. Best, Epstein, Gardener, Grove, Maves, Meyer, Monson, Vehe, Waldron, Ziskin, Bagnall, Dawson, Faulkner, Oxyner, Ritchie, Smith, Thomson, Bryan, Turner.

Fourth Session

March 27, 1928, at 7.30.

1. Leuman M. Waugh, Nutrition and health of the Labrador Eskimo.

2. D. C. Friesell, State Board examination in the United States.

This session was interrupted to allow members to attend a Research session of the Dental Schools' Association.

Supplementary List of Nominations to Membership

Elected at the close of this session.

Halifax—J. S. Bagnall, A. W. Faulkner, W. G. Dawson, W. C. Oxyner, S. G. Ritchie, R. P. Smith, G. K. Thomson.

Iowa City—A. W. Bryan.

Minneapolis—Elmer S. Best, Erwin Epstein, Boyd S. Gardener, Carl J. Grove, Herman A. Maves, Fred L. Meyer, George S. Monson, William D. Vehe, Carl W. Waldron, Daniel E. Ziskin.

New York City—Joseph D. Eby.

Philadelphia—C. R. Turner.

Canadian Dental Research Foundation

Toronto 5, May 15th, 1928.

Dear Doctor:—

The Canadian Dental Research Foundation expects to have available shortly, for distribution, two booklets covering the more recent work of Dr. Harold K. Box and Dr. W. E. Cummer.

The Foundation has already printed nine Bulletins, and distributed them to the Dental Profession in Canada without charge. Some of these Bulletins have attracted a great deal of attention in Dental circles in other

countries, and hundreds of requests have come from all over the world for copies. These were supplied at a charge to cover cost, when sent to applicants other than Canadian Dentists.

It has been some time since the foundation has had any material suitable for publication. Research work cannot be turned out on a scheduled date, but must wait until it has progressed to a point, rendering it suitable for publication. Furthermore, the foundation has not enough funds to support research work, or recompense

research workers, and has therefore had to confine its efforts to the printing and distribution of Bulletins covering work done in University Laboratories.

The two Bulletins referred to are to be published by the University of Toronto. The Canadian Dental Research Foundation intends to secure copies, and distribute them free of charge, to every Dentist in Canada who requests copies. Dr. Box's work is entitled "Treatment of the Periodontal Pocket," and will be an extensive booklet with one hundred and twenty-five photo engravures, and covering fully the pathology of the Periodontal Pocket, also case management and instrumentation and instrumentation. Dr. Cummer's work is entitled "Impressions in Partial Denture Service." Most of this

work has already appeared serially in the Dental Cosmos.

Both of these Bulletins are of a very practical nature, and should be of great assistance to the Profession. If you would care to have copies, will you kindly check off on enclosed card, the Bulletin or Bulletins you desire, fill in name and address, and mail. Any dentist in Canada who feels that he has any interesting cases to report, or original work worthy of publication, is requested to communicate with the foundation. Suggestions as to suitable subjects for research work, would also be welcomed.

Faithfully yours,

R. GORDON McLEAN, President.

EDMUND A. GRANT,
Secretary-Treasurer.

Copper Amalgam as a Root Canal Filling

F. C. HUSBAND, D.D.S., TORONTO.

The antiseptic properties of copper amalgam have been known and experimentally attested to again and again for many decades. Miller made experiments to determine the antiseptic properties, if any, of filling materials. He not only found that copper amalgam freshly prepared as well as red copper amalgam fillings, had antiseptic properties, but he also found what was fully mere significant—that dentine from extracted teeth which had been filled with copper amalgam was not only sterile, but had antiseptic properties also (Marshall's Text-book of Operative Dentistry). Simms repeated the experiments of Miller and found that copper amalgam and oxychloride of zinc had definite antiseptic properties for some distance about them (Science and

Practice of Dental Surgery—Bennett). Black says: "This amalgam has so many good qualities that many abandon it with much regret. I think it is generally acknowledged that copper amalgam fillings retain good margins, when they are once made perfect, better or more perfectly than any other filling material. Within the limits of its strength it is as rigid as hardened steel. It does not contract, but exhibits very slight expansion on setting." Black believed its inhibition of caries was largely due to its perfect fitting of the cavity walls (Hodgens' Metallurgy). Kirk says: "Its preservative qualities render it a valuable constituent in teeth of low-grade structure" (Cosmos XXXVII, Page 737). Dr. Foster Flagg says: "I regard copper as a most valuable con-

stituent of any amalgam" (American System of Dentistry). Weagent says that copper amalgam acts as a preservative of the dentine by permeating the tubules with an antiseptic solution (American System of Dentistry). Fraser repeated the experiments of Miller, Simms, Black, Kirk and others, and found that copper amalgam had antiseptic properties of a very permanent character; and further, that it retained its antiseptic properties after having been transferred into a fresh medium every two weeks for a period of five years. Because of this permanent antiseptic property and the fact that clinical experience over many years had shown that it had no irritating properties in contact with vital tissues, it was suggested "that it might be used with decided advantage where discoloration of the teeth is not a factor, as a temporary filling, or in root canals, in cavities below the gum line, and when it could be covered on the exposed surface by another filling material" (Dominion Dental Journal, January, 1925). Dr. Fitch, in the

American System of Dentistry, published 1887, suggested the use of silver amalgam as a root canal filling in preference to gold foil or cotton wool, which were in common use. He evidently wished to be cautious in the matter, because he says: "The writer does not wish to be understood as recommending it for this purpose, but would suggest some points of comparison."

It is quite apparent from dental literature that filling root canals with either silver or copper amalgam never became a general practice, because no text-book mentions it as a method to be followed. Copper amalgam was abandoned as a filling material chiefly because of its discoloration. As Black says, copper amalgam has many desirable properties which should not be lost sight of, and if the technique suggested below is followed, what seemed to be its undesirable properties can be utilized to preserve and save many otherwise doomed teeth, and prevent infected areas about the tooth root end.

Alberta Dental Association

A combined meeting of the Alberta Dental Association and Board was held at the McDonald Hotel, Edmonton, on the 25th of June. The financial statement for the year ending May, 1928, showed the association as being in a very satisfactory position. The following officers were elected: President Dr. V. A. H. Macauley of Calgary, Vice-Pres. Dr. P. McNichol of Medicine Hat, Secy.-Treas. Dr. A. B. Mason of Edmonton. Reports were received from Dr. John W. Clay, representative to the Canadian Dental Association; Dr. L. T. Allen, representative to the D.D.C.; and Dr. A. B. Mason, representative on the Senate of Alberta University. The following committees reported:—Northern

Alberta Disciplinary, Southern Alberta Disciplinary; By-law Committee and the Legislative Committee. Financial grants were made by the board to the Edmonton Dental Association, Calgary Dental Association and the Lethbridge Dental Society an invitation was extended by Dr. L. T. Allen of Lethbridge to the board to hold its January meeting in that southern city and it was unanimously decided to accept this kind evidence of hospitality.

Dr. Scott Hamilton and family are holidaying in Victoria.

Dr. G. J. Roberts has gone to the East on a motor tour.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

ASSOCIATE EDITORS:

QUEBEC—Eudore Debeau, L.D.S., D.D.S., Montreal; A. W. Thornton, D.D.S., L.D.S., Montreal.

ALBERTA—Leslie McIntyre, D.D.S., L.D.S., Edmonton.

NEW BRUNSWICK—Jas. M. Magee, L.D.S., D.D.S., St. John.

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PRINCE EDWARD ISLAND—J. S. Bagnall, D.D.S., L.D.S., Charlottetown.

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BRITISH COLUMBIA—E. H. Hetherington, D.D.S., L.D.S., Victoria.

ONTARIO—S. Stewart Crouch, D.D.S., Toronto; W. C. McCartney, D.D.S., L.D.S., Ottawa.

Vol. XL

TORONTO, JULY, 1928

No. 7

Dangers of Dry Dressing

Most dentists and many physicians seem to think that if their steel instruments are sterilized that all is well. They think enough has been done to satisfy those who talk about sterilization. Some dentists attempt to sterilize their hands and even wear gloves in deference to the gods of sterilization. But what of filling materials, and especially what of paper absorbant points, loose cotton, cotton rolls, wipes, towels, cotton pullets, gutta percha cones, and many other things? The reply the dental salesman makes is that he supplies all these things to the dentist in a steril condition, which means that such substances can be kept steril for all time. This is not accepted by bacteriologists.

If there is to be any choice of what dental equipment is to be sterilized let it be those things which come in contact with the soft tissues and especially the secretions of the circulatory system, such as towels, wipes, cotton, rolls, pullets, cones, gutta percha, broaches, lancets, probes, scalers, currettes, clamps and separators and rubber dam. If any instruments are to be slighted in this matter let it be pluggers, burnishers, files, excavators, chisels and such things as do not come in contact with the circulatory secretion.

The writer once asked a dental friend how it was that a prominent confrere gained and held such a large practice, with skill no better than the average and a personality below many others. The

answer came back promptly "he learned to be clean sooner than the rest of us."

Of all the comments which have come back to me unsolicited from patients sent to dentists for treatment the most frequent has been the office is clean or it is otherwise.

Whether the profession wills it or not, the teachings of dental colleges are taken in courts of law as standard and to be followed by the profession. If dental teachers tell their students that all dry dressings are to be sterilized then the only safe thing for a dentist to do is to protect himself by doing the same. A dentist is in a sorry plight in court if he has neglected to sterilize his dental equipment and an infection has occurred. No confrere should be expected to protect a dentist who has violated the practices of his profession.

The Dentist and His Holiday

Somehow or another there seems to be a proper time to take a holiday. No other time will do so well. Everybody who can, wants to have a holiday when his friends are having theirs. In England August is the holiday month. When they speak of the holiday they mean the Bank holiday or the first of August. Everybody is out sailing, boating, fishing, hunting, walking, motoring, riding and swimming. All kinds of fraternal and professional meetings start with the holiday. Every city and town has its fair beginning August first. The traditional August holiday has spread to Canada and even to our neighbors to the south of us. All the courts and civil servants have their holidays in August.

Dentists, like other people, must take their holidays when it suits them and their clientele best. Those who have a large number of children in their practices in cities and towns may begin their holidays when the schools close but those who practice in towns and villages where a large part of the population have sought employment in cities do well to be at home while their former patients are visiting their old homes and have time to get dental work done. Generally, in Canada, August is the holiday month, but many find it better to take a couple or three weeks in July and the early part of August. The Toronto Exhibition beginning the last week in August seems to close up the summer. Children are tired of holidays and want to see the Exhibition and get back to school.

There seems to be a growing tendency among the adult population of Canada to desire a holiday during the inclement weather of winter and early spring. Dentists who have largely an adult practice may to advantage take such a time for a holiday.

It makes little difference what time of year a dentist takes his holiday provided it is a complete relaxation from his work. It is not a sufficient holiday to close Saturday afternoons or Wednesday afternoons during certain summer months. Mental relaxation is what is needed. Mental tiredness comes on slowly. It is not noticed for years in early life but is coming on none the less surely. That which

comes on slowly leaves slowly. Its oncoming and its outgoing are cumulative. One day's work doesn't bring on mental weariness nor will one day's rest bring on relief from it. Those who have mental prostration have brought it on by years of stress and strain and only continuous rest will bring relief. Two weeks or four weeks of complete separation from a busy dental practice has more real value in it than two holidays a week for a whole year. When one is physically tired a few hours' or a day's rest will bring relief, not so with mental weariness.

Attending dental conventions is not a holiday. It is not so regarded in England but is so regarded in America. The form of holiday should be adapted to the mental and physical needs of the holidayer. The dentist should avoid such summer entertainment as would endanger his hands or his eyes.

Notes

A Toronto dentist sued a patient for his fee for adapting a set of artificial teeth. The patient said the teeth choked him. However the court gave the dentist \$5 and the teeth. Five dollars is poor fee for adjusting a set of teeth. The denture was of little value to the dentist.

The fact that makers of artificial teeth in New York are out on strike indicates somewhat the time that should be spent by dental students in mechanical technique.

At the annual meeting of the Regina Dental Society held in the King's hotel recently, Dr. F. S. Van Woert was elected president. Dr. W. M. Blair, vice-president, and Dr. A. J. Brett, secretary. These officers, together with Dr. W. J. Mooney, retiring president, will form the executive for the coming year. It was stated during the meet-

ing that the 1929 convention of the Western Canada Dental Society would be in Regina and that efforts were being made to have the annual meeting of the Canadian Dental Society held here at the same time.

A dentist in Ontario who fails to pay his annual fees to the College may be prosecuted for practising without a license. Such has happened to one or two members lately.

The Edmonton Dental Society held its annual picnic on the Golf Links Thursday, June 28th. This institution is one of the links that invites the members of Northern Alberta into a working group second to none. Between eighty and one hundred, dentists, with their ladies and children met and spent the afternoon in games and sports. The executive is to be commended for the good work done.

CORRESPONDENCE

Stuttering Improved

May 26th, 1928.

Dr. A. E. Webster, Toronto, Ont.

Dear Doctor:

I have a patient whom I am at present treating for Orthodontia.

In the upper arch I have spread the teeth over half an inch. The result has been very satisfactory, as it has made more breathing space for his nostrils, but what I wanted to know is this:

When he started coming to me he would stutter and stammer a great deal; as the treatment progressed this got less and less till today he does not stutter at all but can read out loud without any sign of it.

I spoke to his parents about it and they have noticed the difference but they thought it was due possibly to books they bought him to study to correct this defect.

Would you please let me know if widening the arch would have the effect of correcting this defect.

Thanking you for a reply, I am,

Yours fraternally,

A. R. HURST.

Answer—It seems quite reasonable that as the action of the tongue is freed there would be less difficulty in articulation. A very few such cases have been reported.

A.E.W.

Strange Symptoms

I know that you are always interested in cases which are a little out of the ordinary, what do you think of this description which was sent in to me. "The patient has an eruption on the mucous membrane of the cheek pockets resembling a spider's web, or branched from several main lines which are white; borders pinkish in color. Also on both sides of the tongue a rosette shape about the size of a pea or larger. Also on the crest of the lips in the form of granules and on the gingiva in cluster form, about $\frac{1}{4}$ inch from the teeth and opposite the septal gingiva. The origin was on the right

cheek pocket about the opening of the parotid duct. It has been spreading since last June. The patient has the sensation of something crawling about over these areas. When the cheeks are expanded with the lips in apposition senses a crackling noise. There has been no benefit on treatment (form not specified) and no microorganisms have been found. Appetite is failing and patient cannot keep anything but liquids on her stomach.

Will be very grateful for your early remarks on the case.

Sincerely yours,

J. STANLEY BAGNALL.

Letter from Japan

It is an improvement to come to Japan and find law and order and efficiency. There are very few native dentists in China whereas in Japan there is hardly a large town without its dentist. A number of these have gone abroad and learned the latest method. The work they have done for foreigners shows a great lack of thoroughness. They do not seem to look the mouth over as a whole. One lady came to me just after having a big bridge—too big—put on. I X-rayed her teeth and found that that tooth and several others had to come out. Another lady came with her work all finished. I found 27 cavities and a third molar to be extracted. Her dentist was foreign trained and the BEST in Kobe. 90 per cent. of the inlays I see do not fit at the gingival. One dentist put on a bridge a la Ante but

the inlay did not fit on the lingual. I could put an explorer under it. I changed it using almost the same preparation a few months after it had been put on. The gum tissues are universally neglected. The Japanese are fond of showing gold. I have seen cases where nothing but gold was showing. One old lady was going to a party and as she was going out the gate she said to wait she had forgotten her teeth. She ran back and got a gold set that fitted over her lowers and slipped them on.

We will be seeing Dr. Whang today we expect. I know he has had the best of training and I hope he will keep up to the high standard you have set him. Worlds of thanks for all you and the others have done for him.

Most cordially,
JOHN E. THOMPSON.

Two Kinds of Dentists

Skidegate, B.C., May 26th, 1928.

Dr. A. E. Webster,
Honorary Dean, Royal College of
Dental Surgeons, Toronto, Ontario.

My Dear Webster:—

"What part should a dentist take in rendering 'Health Service' etc.?"

I might say, in answer to such a question, all depends on the patient's case and the results the dentist wishes to obtain.

There are two schools in our profession: the old one which upholds the traditions of service to humanity and a smaller, more recent one, which makes dentistry a business proposition for profits.

Take, for instance, a case where several medicals have advised one of

your patients to have all teeth extracted on account of stomach trouble, etc. The Dentist having studied HEALTH for years, and being well aware of the real cause, naturally objects to his patient having about thirty GOOD teeth extracted, knowing full well that such a procedure would merely increase the disease. Here, I would consider the dentist perfectly justified in advising his patient "HOW" to proceed to alleviate the disease, seeing the medical practitioners were in error regarding the cause.

Of course, the patient may have gone to the wrong dentist, he being one of the old school.

Fraternally,
P. F. SIZE.

Premier's Office

Regina, May 7th, 1928.

Dr. Harry S. Thomson,
86 Bloor St. W., Toronto.

Dear Sir:—

The province of Saskatchewan has not only been highly honoured, but also very fortunate in being chosen by the Canadian Dental Hygiene Association as one of the provinces in which a Campaign for better mouth health has been sponsored.

The Department of Public Health and the School Hygiene Branch of the Department of Education were very pleased to have the opportunity to co-operate with yourself and the various dental Committees appointed throughout the province in making this effort the success that it was.

Insofar as we can learn, the whole Campaign has been a success, inasmuch as it has stimulated not only the general public, but also the whole Dental Profession to the value, necessity and possibilities of mouth health. The Campaign has been the means of placing this branch of preventive work in Sas-

katchewan, on the plane to which it belongs, and has brought the Dental Profession in much closer touch with the Department of Public Health, than it has ever been in the history of the province.

The thanks of the people of Saskatchewan is due the Canadian Dental Council, in making this campaign possible; the Dental Profession is to be congratulated on the splendid reception and united support it has given to the Provincial Committee in charge of the various districts; great credit is due the Provincial Committee, who so successfully arranged the details of the Campaign, and to yourself, the representative of the Canadian Dental Hygiene Council, who directed the line of attack, and so completely sold the scheme to the people.

From a Public Health viewpoint it is hoped that the Dental Profession may carry on in this good work, and make this splendid beginning the basis of continued efforts.

Yours truly,

JAMES G. GARDINER.

Anaesthesia

GORDON FRAWLEY, D.D.S.

During light anaesthesia, the pupil will react to light—the eyeball rolls—the conjunctive sensitive to touch—eyelids resist opening and the eyelashes when brushed usually cause a reflex wink.

The reaction to light becomes more and more sluggish as the anaesthetic approaches the normal stage where

the pupil will not react to light and is found small or moderately dilated. The conjunctiva is insensible to touch, the lids relaxed and usually closed—the eyeball may be stationary or rolling slightly. The important factor is the reaction to light. The touching of the eye, unless done with a large, smooth, round, sterile

instrument, is not advisable. A rough surface, such as the finger, may cause an irritation.

As the patient enters the third or profound stage, the pupil enlarges and, if the oxygen percentage is not raised, will become dilated until only a small ring of iris is seen. The eye, of course, does not react to light. The inferior rectis muscles, usually the strongest of the eye group, pull the eye down. The eyelid is usually open and the patient assumes a wild, staring look. This, of course, is due to muscle spasms.

The pupillary signs are also muscle reactions shown through the nervous system.

The dilator or radial muscle fibres, derive their nerve supply from a sympathetic nerve or the long ciliary, while the constrictor muscle fibres are supplied by the short ciliary, a branch of the oculo-motor or third cranial nerve.

During "light anaesthesia," the pupil reacts to light due to stimulation of the sympathetic, as the anaesthetic continues the sympathetics become paralysed and the constrictors function alone—so during the normal stage the pupil is usually slightly contracted.

In the third or profound stage, the brain centres become paralysed, including the oculo-motor or third cranial nerve and the pupil enlarges. The "deeper" the patient becomes, the wider the dilation. This shows at all times the condition of the brain.

The eye is of great help as a sign of anaesthesia, but more particularly when bringing a patient back from a very profound stage.

Here the breathing stops—the pupil widely dilated, the eye staring and muscles in general very rigid. It

is necessary to force oxygen into the lung. The forcing of oxygen, however, does not stimulate the respiratory centers and the breathing does not commence at once. If oxygen is continued to be forced, respiration is only delayed until the patient is wide awake and the induction has to be started all over.

The eye here is of great value. As soon as the pupil begins to contract it shows that the brain is receiving oxygen and the anaesthetic mixture can be readjusted and continued.

The success of the anaesthetic depends on the recognizing of these signs and the regulation of the oxygen percentage accordingly. This can only be done by practise. The nervous system reacts very rapidly to any change in the oxygen content of the blood. This reaction varies with the patient to such a degree that a constant watch must be kept if the narcosis or anaesthetic is to run smoothly.

Team work is advisable for anaesthetics continued over a period where definite operative technique is required. Dentists do not, as a rule, employ the use of an anaesthetist, or call in their confreres to administer an anaesthetic, but shoulder the whole responsibility, which in so many cases results in failure. To attempt an operation using a general anaesthetic and, because the patient's reactions do not agree with some A. B. C. rule, terminate it with a local, is quite an admission of ignorance of the discarded agent.

Ref. E. I. McKesson

P. J. Flagg

W. D. Halliburton

C. W. Greene

Taschiro and Haldane.

An Adequate School Dental Service

The State recognizes its responsibility in educational matters. It provides the necessary advantages, and insists upon the children attending school. But the physical is of as great importance as the mental, and as the state accepts its obligations on one case, how can it evade its responsibility in the other. The state forces the child to attend school, but does not protect the child from contracting disease while at school.

An efficient dental service means better moral health. The physical, mental and moral are intimately, closely related. That which injures one, to a certain extent weakens the other. Endurance, ability and reliability go hand in hand. A pupil physically weak is handicapped in his intellectual development, and a pupil mentally weak is handicapped in his character building.

Since the days of Juvenal, educators have been quoting that much abused phrase "A sound mind in a sound body." And while they have made diligent provision for schools in which sound minds could be shaped, they have felt that these schools needed little scrutinizing as to their fitness for conserving and developing sound bodies. They have failed to recognize that the true aim and function of the school is to make healthy, happy, and successful citizens. Those children receive the best education who are best prepared to take up the active duties of life when school days are over, and to successfully fill their places in society. The vast majority of children come into the world with healthy bodies, and it is the duty of the school to see that their health is protected and their physical powers developed. Most boys and girls are mentally normal, and if properly

trained will develop into men and women of ability. Potentialities for good exist in every child, and these latent moral feelings when fostered lead to reliability and exemplary character.

A school programme can be worked out which will give a child an opportunity to develop all his God-given powers and faculties, and a school dental service will play an important part in that system. If a child is to take full advantage of his educational facilities, he must not be handicapped by physical defects.

All knowledge is gained through the senses, through the five main windows of sight, hearing, touch, taste and smell. The child looks out upon the surrounding world and gathers in the sensations, images and concepts which are developed into the mental material. What a great catastrophe if these sense organs are diseased or defective, and in consequence the knowledge gained through them is not correct. All psychologists and psychiatrists agree that thought is dependent upon the body; when the brain is poisoned or diseased, the nerves weak, or the internal glands functioning poorly, intellectual development is interfered with. All these conditions may be caused to a greater or less extent by toxins which enter the blood stream from abscess areas and pyorrhea pockets. Then again if a child is to make educational progress he must concentrate upon his work. How can a child centre his attention upon study if suffering pain, or weakened by dental disease? I will not take time to deal with the loss of opportunity caused by absence from school, or of the extra burden thus placed upon the teacher, but will

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content myself by quoting the opinions of some of our prominent educators on this subject.

From J. A. Taylor, B.A., Public School Inspector, city of St. Thomas and district No. 2 Elgin: "It is found that the great majority of children who suffer from physical disability are from one to five years behind other children of their age in their studies."

Dr. Luther H. Gulick of New York is responsible for the statement that of 40,000 children examined, those with two or more bad teeth averaged five months behind the grade they should occupy, and observations made in connection with the Toronto schools bear out this contention.

A test made in Cleveland demonstrated a 60% increase in efficiency after proper dental treatment.

Wallis of London, England, who was one of the original investigators of the conditions of children's mouths: "Those with the most highly septic mouths were frequently two standards below what they ought to be in accordance with their age."

The old saying that if a pupil is to make the best use of his educational advantages he must have a sound mind in a sound body is just as true today as it ever was. It is a psychological impossibility to reach the maximum of intellectual efficiency unless the mind has a sound body through which to function. True, there are examples in history of great minds operating in weak bodies, but it is also true that these minds would have been still better had they had strong bodies through which to work.

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DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

OFFICIAL ORGAN OF LEADING DENTAL ASSOCIATIONS IN
CANADA

LARGEST NUMBER OF SUBSCRIBERS IN CANADA

Editor, A. E. WEBSTER, D.D.S., M.D.S., M.D.

Honorary Dean Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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Dominion Dental Journal

Vol. XL

TORONTO, AUGUST, 1928

No. 8

ORIGINAL COMMUNICATIONS

Dominion Dental Council President's Report

GEORGE K. THOMSON, D.D.S.

Mr. President and Gentlemen:—

Since our last meeting in 1926 at Halifax, Nova Scotia, several changes in the personnel of representatives on the Council have occurred, and I have pleasure in extending to the new members a hearty welcome, and hope that our relations may be as harmonious and pleasant as those which have existed ever since the organization of the Council. In expressing my regret at the retirement of Drs. McGuire and Clay, I wish to place on record our appreciation of the excellent service they have rendered the profession of Canada during their membership in the Council.

It is with regret that I note the absence of our dear old friend, Dr. J. S. Bagnall, one of the Charter members of this Council, who has been present at every meeting since its organization in 1905. Dr. Bagnall's health, which recently has not been good, prevents his attendance at

this time, and I suggest that a resolution of sympathy and hope for his return to health be adopted and forwarded to him by wire. The alternative representative for Prince Edward Island is Dr. Smallwood, and I have pleasure in introducing and welcoming him to our Council.

Doubtless you are aware of the successful organization of the Canadian Dental Association. In this connection I wish to express the appreciation of this Council of the excellent and successful efforts of the delegates representing the Provinces.

At the last meeting of our Council, a committee of our executive, with Dr. Clay as chairman, was appointed for the purpose of discussing with the members of the Dental profession in Quebec and British Columbia, the possibility of these Provinces electing representatives to the D.D.C. and becoming members of this organization, thus promoting a plan of Federal In-

corporation similar to that of the Canadian Medical Association and Dominion Medical Council.

Considerable correspondence was conducted by this committee, and conferences with representatives of the Dental profession in Quebec were held by the Alberta representative, Dr. Clay, and your President, Dr. Clay conferring also with the representatives of the Dental profession in B.C., who agreed that it would be desirable to wait for the re-organization of the C.D.A. and this meeting of the D.D.C. before taking further action. A recent conference of your President and the representatives of B.C. to the C.D.A. indicates that at the present time British Columbia is not inclined to discuss the matter of membership and representation in the D.D.C. Quebec, however, while not inclined to consider favorably membership in this organization, has under consideration an interchange of licences with Provinces which require qualifications similar to those required in that Province.

Considerable correspondence, some of which appeared in the Dominion Dental Journal and Oral Health, has informed the profession generally of the respective objects of the D.D.C. at the C.D.A., and your President did not consider it necessary or desirable to add anything to the facts and opinions contained therein.

I am pleased to report that both Universities of Alberta and Dalhousie, Nova Scotia, have adopted a standard of education equivalent to the other Dental schools in Canada, and that we now have a uniform curriculum of as high a standard as any country in the world. Dalhousie University has under consideration a course with summer sessions which is considered equivalent to the present six-year course, and the recognition of which should be considered by this Council.

A resolution of the Board of Ontario with regard to matriculation

requirements is also submitted for your consideration.

As a free and open discussion of educational standards was considered desirable, your President requested Dean Secombe, President-Elect of the American Association of Dental Schools, to arrange a meeting of representatives of our Canadian schools this week, but time did not permit; and I now recommend that we invite representatives of these schools to meet with us to-day or to-morrow for this purpose.

Arrangements with the Nova Scotia Dental Board, whereby the examiners of the D.D.C. will conduct the examinations for that body have been completed, but will not become effective until 1930. Correspondence with the Attorney of the Board is submitted.

Suggestions with regard to amendments to our Constitutions and By-laws of a radical nature will also be submitted.

Conferences with Dental educationists of the United States indicate much interest in and approval of Canadian Dental Education, and the fact that we have a uniform standard in our schools. Correspondence in this connection is also submitted.

As Chairman of the Committee of Dental Education of the Conference of Canadian Universities, I presented reports to that body in 1927 and 1928, and resolutions of approval were adopted by that body. Reports were also presented to the Canadian Dental Association and the Nova Scotia Dental Association.

Correspondence with the Board of Regents of the State of New York is herewith submitted.

Doubtless matters of interest not mentioned in this report will be reported by the Secretary-Treasurer.

In closing, I wish to express my appreciation of the honor you conferred on me two years ago and the co-operation I have received. If I have

apparently failed in fulfilling my duties, such failure was certainly not due to lack of interest. I was personally requested by the President of the C.D.A. to postpone further action

with regard to the membership of Quebec and British Columbia until after re-organization of the C.D.A., and I complied with his request.

(Signed) GEO. K. THOMSON.

Ontario Dental Association President's Address

A. E. WEBSTER, D.D.S., M.D.S. M.D., F.A.C.D.

The President's address — time-honored bore—mostly uninteresting—generally a waste of time and yet for history's sake it must be presented. The president is expected to give a report of the doings and progress of the association during the period of his stewardship. In this case such cannot be, because by the constitution the president is a presiding officer only and has no more to do with the guiding of the destinies of the association than any other member of the board. I do not know if the chairman of the board of governors is to make a report of that body's doings or not, but in case he does not do so, I may say, a more harmonious, interested and willing group of men never came together than this board of governors.

The retiring officers of last year held their closing meeting and immediately following was the organization meeting for this year. Business was done with dispatch. The chairman, by precedent, took his place, committees were appointed and the secretary outlined the business of the coming year.

There was a keen discussion on whether the programme committee or any other committee for that matter should hold its meetings and re-

port its actions through its chairman, to the board, or whether the whole board should sit in on all actions as reported by the secretary. It was finally decided that the whole board should direct the secretary what was to be done and that he report his actions to the board. This, in a word, did away with all committees of the board of governors. The president, not being the chairman of any committee, is at a loss to know who should report for the board or other committees. The action of the board would lead one to think that it would be the secretary's or the chairman's duty to report for all committees. However, the board has passed a resolution asking the incoming board to propose to you such changes in the constitution and by-laws as will tend to make them more nearly harmonize with the actions of the board. The constitution was not originally drafted to conduct the Association's business in the manner now followed. It is out of harmony with our present methods.

The programme, as here presented, is a credit to the work of the board of governors and those dentists invited to become members of the programme committee.

A personal word; I stand before you as your presiding officer by an



A. E. WEBSTER, D.D.S., M.D.S., M.D., F.A.C.D.

accident. My friend, Dr. Winnett, of Kingston, who was vice-president, should have had the honor of presiding at this meeting, but he insisted on his resignation being accepted. I should have preferred a seat on the board and an opportunity to serve you in preparation for this great honor.

Under the circumstances I accepted the honor with the greatest of gratification and willingness to serve. I hope my year of office may be of value to the association and gratification to those who wished me to accept the honor. No small part of the success of this meeting is due to the friends and officers of the Canadian Dental Association which we welcome in meeting with us. Such friendly relations speak well for the future of Canadian dentistry. When I hand the gavel to my successor at the close of this meeting I hope he may feel the thrill which came to me when I accepted the token of office.

As one who had something to do with the subject matter to be discussed at this meeting let me give attention to the general idea of the programme. A great change is coming over the practice of operative dentistry without many of the leaders knowing what it is, or what has brought it about. Dentists are finding themselves spending more time on oral hygiene, oral prophylaxis, diet diagnosis, preventive measures and small fillings and less on crown and bridge work. Here and there a leader says pits and fissures are to be treated before decay begins; another says small cavities should be filled as small cavities, teeth which cannot stand alone should be extracted, etc. I hope as I present the history of what has happened in the past forty years you will recognize that history repeats itself, and that the main features of the progress of the past will be exemplified in the programme you will listen to.

Dental Caries

When Miller discovered the pathology of dental caries the prevention of tooth decay was thought to be within reach. If bacteria were the cause of dental caries than the cure was simple, just destroy or poison the bacteria and all was done, but it didn't turn out to be so easy. It was thought that if drugs such as phenol or bichloride of mercury would destroy bacteria they would perforce stop dental caries. Dental writings of the eighties are filled with prescriptions for bacterial mouth washes. It was soon found that this treatment was a failure. The next step was to neutralize the acid which was formed by the bacteria and thus prevent the solution of the tooth structure. Dr. Black, in one of his articles on dental caries, tells of having attended a dental convention in St. Louis where many dentists were carrying litmus paper in their pockets to test the saliva of others so as to determine if alkaline mouth washes would be indicated. Like the disinfectant mouth wash the alkaline mouth wash was a failure. An interesting feature of this meeting will be a presentation by Dr. Banting of a local treatment of dental caries by applying drugs to the surfaces of the teeth. It will appeal to you to be reasonable as it did to the dentists of Miller's time.

Oral Prophylaxis

Williams and Black, about the same time, discovered that decay of teeth on smooth surfaces began under a gelatinous plaque which protected the bacteria from poisonous drugs applied to the teeth or mouth. D. D. Smith, of Philadelphia, conceived the idea of polishing the surfaces with wooden pegs carrying an abrasive. By this plan the bacteria were disturbed so often that decay could not take place. This method or practice is known as oral prophylaxis. It has been a distinct success

except that it has to be done so often that many patients get tired of it and besides it cannot be applied to defects and crevices.

Oral Hygiene

The next step was easy, ask the patient to polish the surfaces of his own teeth and thus prevent decay. Then came the hoard of tooth polishing preparations. Every man his own dentist. They were all medicated at first and very coarse in grit. The expectation was to remove the plaque with the grit and destroy the bacteria with a drug, exercise or massage the gums with the brush which would cure pyorrhea, a true shot gun prescription. The present thought is that the patients cannot prevent decay with drugs nor prevent pyorrhea with grits, oral hygiene is a toilet practice only. The less drugs and grits used the more beneficial the practice.

Regular Dental Examinations

Up to the past ten or twenty years, the dentist was appealed to only when the patient was suffering pain. There was no thought of consulting him at regular intervals. At the present time most dentists arrange to see their patients by appointment, and in this way cavities are found and treated before they become painful or involve the vital tissues. Regular dental examination has been one of the largest factors in preventing dental caries in some practices.

Diet

As time goes on diet is becoming recognized more and more as a factor in dental disease. The study of the ductless glands, and vitamins are important factors associated with diet. It would seem that it is not only essential to have the proper elements in foods for growth and life, but also to have normal ductless glands, vitamins and sunlight. The great panacea for everything today is cod liver oil, calcium A., sun-

light, vitamins and ductless glands.

Notwithstanding what has been done to prevent or cure decay of the teeth by drugs, oral prophylaxis, oral hygiene, diet or regular dental examinations, filling of cavities of decay stands out as the most efficient treatment up to the present time, and yet when all or many of the methods mentioned are employed tooth decay is so reduced or modified that the practice of filling teeth is very greatly modified also. If such practices are followed there are few, if any, large cavities to fill. Proximal surfaces which would ordinarily decay are immune. Extension for prevention on smooth surfaces need not be so rigidly followed as if patients visited a dentist only when pain demanded it. If only small cavities are to be filled then there is need of small instruments and an operative technique adapted to these requirements. We were unfortunate in not having Dr. Prym, who has made a study of this subject. Dr. Davis will cover the dietetic aspect, Dr. Hyatt the prevention of decay in pits and fissures, Dr. Bunting the prevention of decay by drugs.

Children's Dentistry

Loss of deciduous teeth prematurely is a large factor in the loss of permanent teeth in later life. Much has been done in the last decade to care of children's teeth; first it was with the idea of preserving the child from toothache, but now it is done chiefly for the preservation of health by maintaining a clean oral cavity. A few years ago dentists said a great deal about the bad influence on health caused by the loss of the power of mastication; strangely enough this subject is almost lost sight of in modern discussions of dental subjects. Decay of the teeth is a disease of childhood and young adult life, and any attention which will preserve deciduous teeth will be reflected in the permanent teeth.

Ontario Dental Association, Annual Convention, 1928

Minutes of the 61st Convention of the Ontario Dental Association, held at the King Edward Hotel, Toronto, June 4th, 5th, 6th and 7th, 1928. The President, Dr. A. E. Webster, presided at all the general meetings.

The Convention consisted of general meetings on the afternoons of Monday, Tuesday and Wednesday, of group clinics on Tuesday and Wednesday mornings, and of individual table clinics on the Thursday morning. Suitable entertainment was provided, and this took the form of a Garden Party at Donalda Farm, on the Monday evening, a Re-Union Luncheon on Tuesday at noon, a Dinner Dance on Tuesday evening, a Round Table Luncheon and Conference on Wednesday at noon, and a Golf Tournament on Thursday afternoon.

The ladies who accompanied the Dentists to the Convention were entertained by the Ladies' Committee on the Wednesday afternoon, and special events were planned and successfully carried through by organized classes of graduates and the fraternities.

The Canadian Dental Association met in United Convention with the Ontario Dental Association and held a business meeting on the Tuesday afternoon. At this meeting the Canadian Dental Association passed a resolution providing for a Board of Delegates to manage the business of the Association.

On the Wednesday afternoon, the meeting was turned over to the Royal College of Dental Surgeons, and a bust of the late Dean James Branstons Willmott and a portrait of Dr. A. E. Webster were unveiled.

The Monday afternoon meeting was convened at one-thirty o'clock. The President, Dr. A. E. Webster, introduced Controller Robbins, who represented the Mayor and Council of the City of Toronto. Controller Robbins, in well-chosen words, extended a very cordial welcome to the Dentists of Canada, and their guests to the Convention City. He stated that Toronto was taking a great interest in health matters, that the City Health Department was considered one of the best on the continent, and that ample provision was being made for parks and playgrounds. He especially emphasized the value of the work being accomplished by the Dental service under the able direction of Dr. E. A. Grant. Controller Robbins stated that Toronto was proud to be recognized as the University City of Ontario, and made reference to the Faculty of Dentistry, University of Toronto. He concluded his excellent address by extending the freedom of the city to those attending the Convention.

Dr. Webster thanked Controller Robbins for his message of welcome, and stated that he felt sure that the members in attendance at the meeting would enjoy their stay in Toronto.

The President then called upon the Secretary to make some announcements. The Secretary stated that at the conclusion of the Ontario meeting, on Wednesday afternoon, the Royal College of Dental Surgeons would hold a meeting and unveil a bust of the late Dean Willmott and a portrait of Dr. A. E. Webster.

Dr. T. F. Campbell, Chairman of the Board of Governors, moved, sec-

ended by Dr. W. E. Willmott, that,

Whereas, the Constitution calls for the election of two members to the Board of Governors at this session of the Convention, and,

Whereas, a Nominating Committee is to be appointed to recommend a list of officers for other positions;

It be decided to defer the election of the two members to the Board of Governors until the business meeting on Wednesday afternoon, and that the Nominating Committee be instructed to recommend candidates for these positions. The motion was carried unanimously.

Dr. Campbell also moved, seconded by Dr. Marshall, that the printed programme be accepted as the order of business for the Convention. This motion also received the unanimous support of those present.

Dr. Devitt gave notice of motion, as follows:—

I hereby give notice that at the business meeting of the Ontario Dental Association, on Wednesday afternoon, I will move that the incoming Board of Governors be instructed to prepare and present at the next annual meeting a report showing how the Constitution and By-laws of the Ontario Dental Association can to advantage be revised, and that in the preparation of this report, they take into consideration the question of arranging for life membership.

The revised constitution and by-laws are to be submitted to the next annual meeting of this Association for adoption.

The President announced the following Nominating Committee, and asked them to be ready to report on Wednesday afternoon at 2 o'clock:

Dr. G. H. Campbell, Orangeville, Ont. (chairman); Dr. A. D. A. Mason, Toronto, Ont.; Dr. A. R. Pogue, Hamilton, Ont.; Dr. L. E. MacLachlan, Ottawa, Ont.; Dr. J. G. Paterson, Hornepayne, Ont.

At this stage of the meeting, Dr.

Webster handed the gavel to Dr. T. F. Campbell, Vice-President of the Association, who presided while Dr. Webster read the President's address.

Memorial.

To members of the Ontario Dental Association who died during 1927-1928.

Some who, a year ago, met with us in Annual Convention, are not with us to-day. During the year they passed on to the Homeland. To know, to honor, to esteem as friends, and then to feel their bodily presence removed, and forever, is indeed a sad bereavement.

To one the call came in the morning of life. One moment he stood erect, strong, confident in the years stretching peacefully before him; the next he lay helpless, doomed to silence and the grave. What blight and ruin met his anguished eye, no tongue can tell. What brilliant broken plans, what baffled high ambitions, what sundering of strong warm manhood's friendships, what bitter rending of sweet family ties! But sad and sorrowful as it surely is, heart-breaking to wife and little child, it may after all be best just in the happiest, sunniest, brightest hour of the whole day, to lay down the task so well begun to say farewell to friends that are dearly beloved, and to feel upon the youthful brow the breath of the Eternal Morning. Our God knoweth best.

To another, the call came when manhood's morning had reached the noon-day hour. In the very prime of life and amidst its many activities, much accomplished, much still to be done, and in the heart the rapture of a high resolve. Masterful in his mortal weakness, he became the centre of the love of his friends. But all the love and all the sympathy could not share with him his suffering. He trod the wine press alone,

with unfaltering front he faced death, and with unfailling faith he took leave of life.

And to yet another, the call came in the eventide, when man's short day was done, when the work of life was finished. Beneath the silent stars the tired laborer fell asleep, and sorrowing friends said he added to the sum of human joy; he left the world better than he found it. He had striven hard; he had achieved much; he had passed the allotted span, and as death pressed down the lids of rest over dim and weary eyes, he felt upon his pallid lips love's last and holiest kiss, and was restored to the bosom of Divinity.

Thus they lived, and thus they died. But, no! a great man never dies. Great deeds are imperishable, noble characters are immortal. The body may go down to the tongueless silence of the dreamless grave, but the spirit lives on, the illustrious example still exerts its wonderful influence. They loved the beautiful; they helped the weak; they cheerfully gave of their time and energy to improve the lot of their less fortunate fellow-citizens. How well they performed their duties as members of our profession, we all know; they never courted fame or adulation, but were ever ready to undertake the task which the opportunities of the hour presented. With justifiable and laudable zeal, they contributed their best efforts to the advancement of Dentistry and the increase of its service-rendering power.

Great memories imply great responsibilities. Virtue is as beneficial by its example as by its immediate effects, and we who may be numbered among the friends they loved will cherish and emulate their examples. Our circumstances may never demand of us any great and outstanding service for the public good, but each of us may serve our generation greatly, if we do our best

in the highest and most unselfish manner. Thus may we add to their efforts by perpetuating the principles they so strongly exemplified in their lives and teaching.

They are gone, but their memory liveth;
They are dead, their example is here;
The sweetness and fragrance it giveth
Will linger for many a year.

For we know that if the earthly house of His tabernacle be dissolved, we have a building of God—a house not made with hands, eternal in the heavens.

At the conclusion of this address, Dr. Walter E. Willmott read the Necrology report, as follows:—

- 1875—R. M. Fisher, Warton.
- 1890—A. A. S. Burns, Montreal.
- 1895—W. C. Brown, Prescott.
- 1895—W. W. Thornton, Toronto.
- 1897—H. E. Silk, Toronto.
- 1899—J. S. Somers, Toronto.
- 1900—G. M. Hermiston, Toronto.
- 1901—J. A. C. Hoggan, Richmond, Va.
- 1911—E. A. Higley, Chatham.
- 1911—M. Schwartz, Detroit.
- 1913—M. W. Rutherford, Toronto.
- 1916—M. H. Hagey, Preston.
- 1923—A. L. Clark, Detroit, Mich.
- A. Day, Toronto.

The memorial service was brought to a conclusion by a cornet solo played by Master Adrian Law, accompanied by Miss Verna Crabb.

The Chairman here introduced Dr. Sherman Davis, of Indianapolis, who gave an illustrated lecture on the subject of Nourishment and Body Structures.

The second essayist for the afternoon was Dr. T. P. Hyatt, who gave his illustrated talk on Developmental Defects and Caries.

As this completed the programme for the afternoon, adjournment was moved and declared.

MONDAY EVENING.

At the conclusion of the session on Monday afternoon, the members and their friends motored to Donalda Farm, where, in spite of inclement weather, an enjoyable Garden Party was held. The programme consisted of a visit to the farm buildings, a buffet luncheon, and an exhibition of swimming and diving. The exhibition of swimming and diving was under the direction of Mr. Eddie Sinclair, and Mr. George Young was one of those taking part.

Tuesday morning was given over to group clinics, and the following clinicians presented the subjects named. Dr. A. A. Stewart was unable to present his work on "Porcelain in Bridge Work."

Clinicians and Subjects.

Dr. Howard R. Raper, New Mexico—"Radiodontia."

Dr. Justin D. Towner, Memphis, Tenn.—"Periodontia."

Dr. R. O. Schlosser, Chicago—"Full Dentures."

Dr. Edward Kennedy, New York—"Partial Dentures."

Dr. Thaddeus P. Hyatt, New York—"Developmental Defects and Caries."

Dr. S. A. Moore, London, Ont.—"Orthodontia and the General Practitioner."

Dr. J. N. Stewart, Hamilton, Ont.—"Dollars and 'Sense' in Porcelain Work."

Dr. W. B. T. Amy, Toronto, Ont.—"Local Anæsthesia Simplified."

Dr. R. G. McLean, Toronto, Ont.—"A Systematic Method of Oral Diagnosis."

Dr. A. D. A. Mason, Toronto, Ont.—"What the Family Dentist Can Do for Child Patients."

Dr. O. S. Clappison, Toronto, Ont.—"Types of Abutments for Vital Teeth."

Dr. J. A. Bothwell, Toronto, Ont.—"Occlusion."

The Re-Union Luncheon of Tuesday noon was a great success. The special speaker was the Hon. Dr. Cody, and he was introduced by the Hon. Forbes Godfrey, Minister of Health.

Dr. Godfrey spoke of the valuable contributions made by Dentistry in the field of public health, and ventured the opinion that the Government dental services would be extended. He stressed the fact that dental disease was the cause of much sickness and distress, and reminded the Profession of its great responsibility in protecting the public from the disastrous results of mouth infection and oral sepsis.

The Hon. Dr. Cody, in a most inspiring address, expressed his admiration for the excellent way in which the amalgamation of the Faculty of Dentistry with the other Faculties has been brought about, and then went on to discuss the responsibilities of the dentist as a private individual, a member of an honorable profession, and a citizen of a great country and Empire.

Mr. Chas. E. Leslie rendered suitable musical selections.

An outstanding feature of the Luncheon was the introduction by Dean Seccombe of Dr. Neelands, of Lindsay. Dr. Neelands is the oldest graduate of the College, and has been in practice for sixty years.

The Canadian Dental Association took charge of the Tuesday afternoon session of the Convention. Dr. J. W. Clay occupied the chair, and a recommendation sent in by the Executive and providing for a re-organization of the Association was adopted. This plan of re-organization places the business of the Canadian Dental Association in the hands of a Board of Delegates.

A paper on Partial Dentures was presented by Dr. Edward Kennedy, of New York, and one on Full Dentures by Dr. R. O. Schlosser, of Chicago.

A large number of the Dentists attended the Dinner Dance in the Crystal Ball Room of the King Edward Hotel, on Tuesday evening. It was a most delightful event.

The programme for Wednesday morning was a repetition of that given on Tuesday morning, and consisted of group clinics.

A Round Table Luncheon and Conference was held in the Oak Room of the King Edward Hotel on Wednesday at noon.

Fourteen subjects were given to as many groups, and these subjects were discussed during the meal time. At the conclusion of the meal, the leader of each group gave the findings to the whole assembly.

The subjects, leaders and associate leaders, were:—

Table No. 1.

Is it true that Dental Caries only occurs in a decomposing Carbo-Hydrate Medium?

Leader—Dr. Wallace Seccombe, Toronto.

Associate Leader—Dr. W. C. Trotter, Toronto.

Table No. 2.

What cases of Orthodontia should be undertaken in general practice?

Leader—Dr. C. A. Kennedy, Toronto.

Associate Leader—Dr. S. A. Moore, London, Ont.

Table No. 3.

Can Periodontoclasia be prevented? Can it be successfully treated?

Leader—Dr. Al. Lester, Hamilton, Ont.

Associate Leader—Dr. C. A. Snell, Toronto, Ont.

Table No. 4.

Should teeth be extracted during acute inflammation? How many infected teeth should be extracted at one time? When is currettage indicated?

Leader—Dr. C. W. Coupland, Ottawa, Ont.

Associate Leader—Dr. W. L. Chalmers, Toronto, Ont.

Table No. 5.

Full Dentures. How to take the impression. How to obtain centric relation. How to handle over-jet and over-bite.

Leader—Dr. J. A. Bothwell, Toronto.

Associate Leader—Dr. L. E. MacLachlan, Ottawa.

Table No. 6.

Partial Dentures. How to take the impression. How to plan for retention.

Leader—Dr. W. E. Cummer, Toronto, Ont.

Associate Leader—Dr. Walter Willmott, Toronto.

Table No. 7.

The advantages and disadvantages of fixed bridge work. The advantages and disadvantages of removable bridge work. Abutments.

Leader—Dr. I. H. Ante, Toronto.

Associate Leader—Dr. O. S. Clappison, Toronto.

Table No. 8.

Copper Amalgam. Where it is indicated as a filling, and as a root canal filling.

Leader—Dr. F. C. Husband, Toronto.

Associate Leader—Dr. L. F. Krueger, Toronto.

Table No. 9.

Anæsthetics. When should a general anæsthetic be used, and when a local?

Leader—Dr. E. W. Paul, Toronto.

Associate Leader—Dr. W. B. T. Amy, Toronto.

Table No. 10.

Should dental pulps be devitalized intentionally? Should a Dentist treat an abscessed tooth? When, and by what method?

Leader—Dr. A. D. A. Mason, Toronto.

Associate Leader—Dr. A. W. Ellis, Toronto.

Table No. 11.

What ethical means can be used by a Dentist in his efforts to build up a progressively profitable practice?

Leader—Dr. R. G. McLean, Toronto.

Associate Leader—Dr. J. N. Stewart, Hamilton.

Table No. 12.

How can a Dental nurse increase and improve the practice of a modern Dentist?

Leader—Miss E. B. Tuck, Toronto.

Associate Leader — Miss E. W. Brown, Toronto.

Table No. 13.

To what extent should the Profession of Dentistry go in supporting Public Dental Services?

Leader—Dr. E. A. Grant, Toronto.

Associate Leader—Dr. H. A. Kilburn, Hamilton.

Table No. 14.

What instruction in regard to mouth cleansing should be given by:
(a) A Dentist to his patient. (b) A Dentist (addressing a public meeting) to his audience?

Leader—Dr. Ross Thomas, London.

Associate Leader—Dr. Harry Thomson, Toronto.

The Wednesday afternoon meeting was called to order at 2.15 o'clock.

Dr. T. F. Campbell, of Galt, Chairman of the Board of Governors, presented the following report of the Executive Committee:—

REPORT OF BOARD OF GOVERNORS.

Mr. President, Ladies and Gentlemen:—

As Vice-President of this Association, it was my pleasant duty to preside at the meetings of the Board of Governors, which consists of 18 members.

Since we last met here in Convention, we have held 7 meetings, and I am pleased to report that perfect harmony prevailed among its members at all times.

The Board of Governors is com-

posed of members selected from various districts of the Province. These members attend the meetings of the Board from time to time, at some considerable loss, both as regards time and travelling expenses, but they do it gratuitously for the good of Dentistry, and when you people are sitting in front of your cosy fireplaces reading some interesting book, or "listening in," the members of the Board of Governors are wrestling with the problems of the programme for our next Convention.

The Board discusses the various problems, and passes the work on for the Secretary to carry out, and I wish to say, in passing, that our Secretary, in the person of Dr. F. J. Conboy, who is very efficient, does the great majority of the work. In fact, I feel I am safe in saying that he does the major part in connection with practically everything that is done.

We have provided you with a programme of Essays, Clinics, and entertainment, which, we trust, will meet with your approval, and we hope you will all take advantage of attending all the meetings of this Convention, and carry home with you much valuable information, as well as very pleasant memories of renewed acquaintances of old-time friends.

All of which is respectfully submitted.

T. F. CAMPBELL, Chairman.

This report was received and adopted by the Association.

Dr. Webster called upon Dr. A. W. Ellis to give the report of the Oral Hygiene Committee.

The report is as follows:—

TWENTIETH ANNUAL REPORT ORAL HYGIENE COMMITTEE.

Ontario Dental Association.

Mr. President, Ladies and Gentlemen:—

I take pleasure in presenting the Twentieth Annual Report of your Oral Hygiene Committee.

The work of this Committee has become very widespread. It is carried on by co-operation with the Dentists of the Province, the Ontario Health Department, and the various Municipal Health Departments. Your Committee has tried, in the past year, to keep the general programme of dental health education and dental services for those who cannot obtain such in the regular way, well in hand.

Most of the activities of your Committee are reported from time to time in the "Booster," so you are all fairly familiar with our work.

1st. Dental Health Education.

This was carried on by means of illustrated lectures by Dentists and others throughout the Province. Your Committee provided booklets, slides, and charts. A very fine new chart is in the process of making, which we think will be very useful in educational work.

The Ontario Department of Health sent motion pictures and an operator to many parts of the Province. At the Canadian National Exhibition, there was a display along the lines of preventive Dentistry. As this is viewed by possibly a million people, one can easily imagine the value of such a display.

Arrangements are being made for similar displays in the smaller places.

Numerous newspaper articles were published dealing with the importance of and methods used in the prevention of dental diseases. This work should be extended, and your Committee would appreciate assistance from the members of the association in preparing such articles.

Surveys of school children are being requested from all over by School Boards and Officers of Health. Dental conditions amongst the children are none too good. Our statistics show that where measures have been taken to lessen these bad conditions, by education along preventive lines, and

by corrective operations, the conditions have greatly improved. This work in the schools must be extended. Focal infection in children, from so-called gum boils, abscesses on the temporary or deciduous teeth, is a real serious menace. Their systems become sensitized to infection, and the foundation for many ailments in early adult life is formed from what has, heretofore, been considered as only a gum-boil on a first tooth. Your Committee feels that it is the duty of every Dentist, every patient, every school board, every school teacher, every officer of health, and every department of health, to so work and strive that this most serious menace of focal infection around the teeth of children must be eliminated. Only in this way can be prevented many of the diseases of the heart, joints, kidneys, gall bladder, and many others which are affecting many thousands in adult life.

Another notable advance in dental health education is that the Director of Dental Services of the Ontario Health Department will give a course of lectures to the teachers in training at all Normal Schools.

Addresses along this line were given to the Ontario Educational Association in April, and will be given to the Ontario Health Officers' Association this month.

A dental health play entitled "The Road to Goodtoothtown" has been written for your Committee by Dr. J. C. Livett, and has been presented. This will be further improved, and in due course published for use throughout the Province.

2nd. Services.

As a result of the investigations carried on by the Director of Dental Services for the Province, the work of this association and others, it was found that many people of the Province, and especially children, were unable to procure needed dental treatment. This was due to the fact that they were either too poor to obtain

the same in the regular way, or were too remote from a practising dentist.

With this in view, a very large and influential deputation from all walks of life waited upon the Government in January. This deputation asked the Cabinet to arrange for Government grants so that:

(1) Municipalities willing to establish a school dental service will receive an annual grant sufficient to cover the cost of the equipment over a period of ten years.

(2) In municipalities too small for a regular dental clinic, arrangements may be made by the municipality to send the children to the office of a resident dentist, who will do the work for the cost of material and overhead, thus giving his time gratuitously. In such cases the Government will be asked to make a grant to the municipality equal to 12½ per cent. of the cost of the service.

(3) Travelling clinics will be organized for the more remote parts of the older Ontario. The municipalities arranging for clinic will pay the Dentist a per diem fee, and the Government will make a grant to the municipality equal to 12½ per cent. of the cost of the service.

(4) Hospital dental departments may be established, the Government giving a grant of 10c per operation, and the municipality paying at least 15c per operation to assist in covering the cost of the service. The Dentists will give their time gratuitously.

The Government was also asked to accept responsibility for providing dental treatment for the people in the unorganized parts of the Province, and to arrange for travelling Dentists to visit the smaller places in these areas.

A plan to make it easier for workers in industry to secure dental treatment was also presented.

The Health Department has arranged

for work in the unorganized parts of the Province, that is, where there is no practising Dentist. This work was started last summer, and will be continued under a satisfactory arrangement with the local dentists.

But something must be done to help those in other parts of the Province. The dentists are willing to do their share, but they cannot bear the whole burden. The Government must take the initiative and assist in this work. Grants are made for many services and purposes, but none, so far, for dentistry.

Common humanity demands that assistance be given. Public opinion, as instanced by the personnel of the deputation, is strongly behind this programme.

Dental service for those unable to pay, with the Government, the municipality and the Dental profession co-operating, is a cause worthy of support. These children and people simply cannot be allowed to suffer ill-health and maybe death. If the Government refuse in the face of all evidence to come to their assistance, they will be failing in their duty.

We feel quite confident that in the near future they will lead the way, and make it possible for these children and others to receive the much-needed treatment.

Your Committee has representation on the Canadian Dental Hygiene Council and also the Hygiene Commission of the International Dental Federation. These connections are very valuable. We can keep thus in touch with what is being done, not only in our own country, but all over the world, in the promotion of mouth health. We have been asked to give a paper at the meeting which meets this year in Cologne, Germany, of the Hygiene Commission of the International Federation.

In order to assist as much as possible with the individual problems of the local committees and to unify the

work, your Committee is arranging to meet with each local Committee throughout the Province.

In closing, we wish to thank not only the members of this Association, but those of other organizations, and the many laymen who have this work at heart, and so ably assisted us.

Dr. Ellis moved the adoption of this report, seconded by Dr. Secombe, and carried.

Dr. Harold Clark, President of the Dentists' Legal Protective Association, presented the annual report, as follows:—

Your Committee met last week, and, after some deliberation, it was considered advisable that in my report there should be presented a brief outline of the inception and development of the Dentists' Legal Protective Association, so that the members should understand the nature of the instrument that is at their service all the time.

A number of years ago, a number of cases came to light where young Dentists were threatened with suits for damages that were so unjust that they were little short of blackmail. As a result, a committee was formed by the O.D.A, with the late Dr. R. G. McLaughlin as chairman, for the purpose of advising any Dentist who might be faced by a possible action. Valuable help was given many a Dentist, especially by the rare common sense and wisdom of Dr. McLaughlin. It soon became evident that most of these cases required to be handled by competent legal experts, and there was formed accordingly the D.L.P.A., with an annual fee of \$3.00 per member. While the Association assumed no responsibility for the payment of any damages should a court action give them to a plaintiff, the Association undertook to provide and pay for the legal expert to defend the case, or in the event of the dentist being at fault, to

advise towards the most favorable settlement. This service was available only for members of the Association. In time it became obvious that it was of great importance to the whole profession, and its future standing in the community that all such cases should have the care of competent legal counsel. Thereupon, the Board of Directors of the College decided that the annual licentiate fee should be increased from \$3.00 to \$5.00, and that they would grant such monies as were needed for the defence of all such actions as might be brought against members of the profession in the Province. Since the above status of the Association has been established, the firm of I. H. Hellmuth, Cattenach and Ramsey has been retained, and has dealt with such cases as have presented. It is very gratifying to report that out of some twenty cases all but two were withdrawn when the plaintiff's counsel was faced with a denial of liability by our solicitor. And of these two, one went to court and was won for the defendant. In the other case, it happened that the plaintiff was killed the day before the case was to be held.

While the constitution of the D.L.P.A. confines its activities to suits and threatened suits for damages, and does not assume any duty to collect accounts, there have been several cases where patients have had work done and thought that all they had to do was to say that the work didn't please them and refuse to pay for it. The Committee of the Association concluded that it was in the interest of the profession at large that these cases should be dealt with to establish the fact and broadcast it that patients cannot play fast and loose with their financial obligations to the dentist.

An analysis and resumé of the cases dealt with in the past year will appear in our journals shortly, and it is recommended that the profes-

sion give this report their careful attention. It has long been established in Law, in connection with the older profession of Medicine and Surgery, that where the practitioner in his work has observed all reasonable precautions, the Law doesn't hold him responsible if the result of his work is not all that was planned and hoped for.

The same common sense immunity in the Law should be enjoyed by the careful, conscientious dental practitioner; but as yet our profession is a young one, and there have not been enough precedents to establish in the mind of the Law that immunity for the Dentist that is enjoyed by the older profession. The work done by your D.L.P.A. is rapidly achieving that end.

The financial report of the Dentists' Legal Protective Association was given by Dr. W. E. Willmott, the Secretary.

The report is as follows:—

DENTISTS' LEGAL PROTECTIVE ASSOCIATION.

Secretary's Report, 1927-1928.

During the year the Association has dealt with a number of cases of dispute between Operator and Patient, mostly in conditions following extractions. In two cases, fortunately for the defendant, the time limit of six months prevented suit being entered. In another case, suit was entered, defence prepared, jury notice struck out, agent instructed, everything ready for the suit, when the plaintiff was killed in a motor accident.

Several cases in connection with Prosthetic work, a refusal to pay, or a demand for a refund, were considered, and the Dentist advised what he should do. So far as reports have been received, the results have been satisfactory.

It might be of interest to report more in detail on two or three other cases:—

(a) Made a four-tooth bridge; small deposit; kept all appointments till completed; not return, year later went to another dentist; bridge scrapped. How can I collect at least the cost of the bridge?

Reply.—In order to make patient liable, necessary to write him the bridge is ready, asking him to take it and pay for it; and if he refused, he could be sued for its value; but since bridge is scrapped, no remedy against him.

(b) Patient left denture to be repaired; Dentist moved to another town and lost the denture; offered to have dentist near patient make another; patient demanded \$35.00, original cost of denture; suit threatened.

Reply.—Patient not compelled to accept offer; has a right to demand denture or damages for its loss. If suit goes on Dentist must prove loss not due to any negligence on his part, which would be difficult; if damages given against the Dentist, would be for value of denture in un-repaired state and not original cost; advised to settle on reasonable terms. Had Dentist near make it for patient.

(c) Removed bridge, and after patient left could not find it; later patient demanded original outlay, \$50.00; denied having lost it, but on principle patient always right, offered to make another without fee; insisted on the money or would sue. Advised to let it go to suit. Case withdrawn before it was to be called.

(d) Concerned the purchase of practice, with the exception of one branch; all other work was to be referred to buyer.

Is a verbal agreement in presence of witnesses as binding as a written?

Reply.—Sale of practice including good-will not necessary in writing. If purchaser takes possession immediate-

ly or pays part of the price, agreement is binding without being in writing, otherwise it must be in writing to be enforceable at law; always advisable to be in writing.

(e) Dr. A. sublet office at a rental and a certain sum to Mr. B., with a promise to refer denture work which he did for short time only. Two years later Dr. A. wished to reduce his practice and sold location, some equipment and good-will, and referred denture work to Dr. X. In agreement, a clause stipulating all new patients and all certain branches of work would be referred to Dr. X. Dr. A. objected that this would prevent him from working for relatives, and it was struck out. In four months two cases had been referred, and none since. What redress?

Reply.—In agreement no provision for sale of good-will, only attempt at such was struck out; could not defend at court that written document did not contain whole agreement.

(f) School dentist; after a survey two boys came to him for some work; gave estimate, and told them to get parents' consent; returned, stated consent given; parents of one refused to pay; principle at stake, whether in case of a minor a written order is necessary before dentist might begin operation. Sued parents and Judge Widdifield gave judgment in favor of the Dentist.

(g) Dr. A., assistant two years with Dr. X on weekly salary; option of buying him out or of starting alone. Started alone. Dr. X. continued accounts with Dr. A.'s name with a notice partnership dissolved. Only times names were coupled was last six months, when both names were on the door. Question:—Does Dr. A.'s name on the door with Dr. X.'s make Dr. A. a partner?

Reply.—As Dr. A. is in no way interested in profits but on a salary, fact of name on door does not make Dr. A. a partner.

Question.—Can Dr. X. call Dr. A. a partner and collect accounts with Dr. A.'s name coupled with his own?

Reply.—Dr. X. had no justification in including Dr. A.'s name on accounts, and notice announcing dissolution of partnership, but Dr. X. has done nothing to render him liable in an action. Quite in order for Dr. A. to notify his patients he has no interest in the practice, and had taken no part in making up the accounts, nor in sending the circular letter.

Apart from these cases involving Licentiates, legal opinion was obtained on three questions:—

(a) Is it legal for a dentist to act as an anesthetist for a medical man for a surgical operation?

Reply.—No law requiring an anesthetist to be registered. Do not see why a dentist should not act as such on request of medical man. Opinion expressed he would not be practising Medicine nor Surgery within meaning of Medical Act. Question of responsibility in case of accident has not been established, but opinion is the surgeon who is in complete charge of case would be the one on whom the responsibility would rest.

(b) In case the dentist in making the injection for conductive anesthesia broke the needle in the tissues, is he forced to tell the patient that the accident has happened, or is he within his legal rights in withholding the information provided he does his best to safeguard the interests of the patient?

Reply.—No legal obligation to inform patient, but to avoid inference which might be drawn by withholding such information certainly proper to tell the patient. If case went to court, judge or jury might consider the withholding an indication that the breaking was caused by negligence. Also patient should know, so as to decide whether or not to have an X-ray taken.

(c) In such cases, where it is

necessary to refer the patient to a specialist, does the dentist accept greater obligation when he makes the arrangements for the patient to go to the specialist, and when he endeavors to see that the specialist is paid his fee?

Reply.—When necessary to refer patient to specialist, should leave the selection of specialist to patient, unless patient requests otherwise. No part of a dentist's business to see that the specialist is paid his fee. Unless the dentist chooses voluntarily to pay the fee, all financial arrangements should be left to the patient.

Respectfully submitted.

W. E. WILLMOTT,
Secretary, D.L.P.A.

DENTISTS' LEGAL PROTECTIVE ASSOCIATION.

Financial Statement for 1927-1928.

Receipts.

Cash from last year.....	\$4,428.76
Bank interest	135.14
From Board of R.C.D.S.....	2,500.00
	\$7,063.90

Expenditures.

Legal expenses for year....	\$ 360.69
Office assistance	2.25
Auditor, 1926-1927	50.00
	\$412.94

Cash on hand April 30th.. \$6,650.96

W. E. WILLMOTT, Treasurer.

The report of the President was adopted on motion of Dr. Clark, seconded by Dr. Mason, and that of the Secretary, on motion of Dr. Willmott, seconded by Dr. Fraser.

The following resolution was moved by Dr. Campbell, of Orangeville, seconded by Dr. Wilkinson, and carried:—

That the D.L.P.A. Executive be asked to report at the next annual

meeting on the matter of obtaining a scheme of Group Insurance against financial loss through suits for malpractice, and also for injuries incurred in actual practice, such scheme to be an arrangement covering all members of the R.C.D.S., and to be covered in the annual fee.

At this stage of the meeting, the report of the Nominating Committee was presented by Dr. A. D. A. Mason. This report is as follows:—

REPORT OF THE NOMINATING COMMITTEE.

To the Ontario Dental Society.

Your Committee wish to nominate the following members to fill the offices, which are rendered vacant.

Hon. President—Dr. A. E. Webster, Toronto, Ont.

President—Dr. T. F. Campbell, Galt, Ont.

Vice-President—Dr. A. W. Ellis, Toronto, Ont.

Archivist—Dr. C. Angus Kennedy, Toronto, Ont.

Sec.-Treasurer—Dr. Fred J. Conboy, Toronto, Ont.

Board of Governors.

Dr. L. A. Kilburn, Hamilton, Ont.

Dr. D. C. W. Coupland, Ottawa, Ont.

Dr. O. S. Clappison, Toronto, Ont.

Oral Hygiene Committee.

Dr. A. E. Willis.

Dr. J. C. Livett.

Dr. F. C. Husband.

Dr. R. J. Reade.

Dr. J. S. Lapp.

Dentists' Legal Protective Association.

Dr. Harold Clark.

Dr. W. E. Willmott.

Dr. Wallace Secombe.

Dr. R. G. McLean.

Dr. W. G. Thompson.

Dr. Fred J. Conboy.

Respectfully submitted.

A. D. A. MASON,
Chairman Nominating Committee.

The adoption of the report was made by Dr. Mason, seconded by Dr. Campbell, of Orangeville, and carried.

Dr. Webster introduced Dr. R. W. Bunting, of Ann Arbor, who gave an illustrated lecture on the Prevention of Dental Decay.

Dr. F. C. Husband, Dean Seccombe and Dr. Hagey took part in the discussion.

The retiring president, in handing over the gavel to Dr. T. F. Campbell, gave a short summary of the programme which had been presented to the Convention, showing that it had been worked out on a definite plan. He thanked all those who had assisted in making the Convention a success, and expressed the hope that his successor in office would receive the same loyal support that had been accorded to him.

The new president, Dr. T. F. Campbell, was then introduced to the meeting, and made the following remarks:—

Mr. President and Fellow Practitioners:—

It is indeed a great honor you have conferred upon me at this time by electing me to the highest office in our Association, that of President. I appreciate the kindly words of my good friend Dr. Snell in introducing me, also your cordial reception. I hope I may measure up to your expectations; but, Ladies and Gentlemen, I have my work cut out for me in following after such illustrious men as those who have recently preceded me, in the persons of Drs. Webster, Bothwell, Devitt, Thompson, Conboy, Moore, Sprott, and others whom I might name.

I appeal to you members of this O.D.A. to assist me in every way possible, and let us make this Association, which is now the best in Canada, the best in America. I appeal to you to become permanent members, and in so doing, you are privileged

to attend any Dental Conventions in America by presenting your membership card from this Association. This membership not only benefits you, but assists the Board of Governors in preparing the programme for our next Convention, for we cannot run it without money, and when we know how much money we have to spend, we can "cut our cloth" accordingly; and I wish here to pay a warm tribute to our very worthy and efficient Secretary, Dr. F. J. Conboy, for it is he who, under the direction of the Board, does all the work. Dr. Conboy has made many valuable contributions to the welfare of our Profession, and is ever thinking and working in the interests of this organization.

In conclusion, I wish to thank the Association for the confidence placed in me, and hope to meet you all at our Convention next year. Come and bring others with you. I thank you.

Dr. Campbell turned the meeting over to Dr. R. G. McLean, President of the Royal College of Dental Surgeons, who presided during the unveiling of a bust of the late Dean James Branstons Willmott, and a portrait of the Honorary Dean, Dr. A. E. Webster.

The various Fraternities and Class Associations held functions on the Wednesday evening.

The programme for the Thursday morning session took the form of individual table clinics, when the following clinicians presented the subjects indicated.

Individual Table Clinics.

1. Dr. W. B. T. Amy, Toronto—"Use and Abuse of Elevators."
2. Dr. I. H. Ante, Toronto—"Oval Wire Clasps."
3. Dr. R. H. Atkey, St. Catharines, Ont.—"Preparation and Manipulation of Synthetic Porcelain."
4. Dr. A. B. Babcock, Toronto, Ont.—"Lap-Joint Inlays. Carmichaels, Where Indicated. Indirect Method."

Preparation Models, Waxing, Investing, Casting and Filling."

5. Dr. H. G. Bean, Toronto—"Orthodontia Overbite Appliance."

6. Dr. J. A. Bothwell, Toronto—"Full Dentures, Prosthesis."

7. Dr. C. G. Chapin, Toronto—"Every-day Uses for a Porcelain Furnace in the Office of the General Practitioner."

8. Dr. Frank L. Cole, Toronto—"A Practical Method of Obtaining a Correct Centric Relation in Edentulous Cases."

9. Dr. D. C. W. Coupland, Ottawa, Ont.—"Removal of Exostosed Roots, Buried Roots, Abnormal Roots, etc." In this Clinic, the removal of Bone, using hand pressure will be demonstrated and instruments used for the different operations shown.

10. Dr. J. J. Craig, Peterborough, Ont.—"Porcelain Inlays and Jacket Crowns—Their Places in Dentistry."

11. Dr. W. A. Crich, Toronto, Ont.—"Methods of Culturing Teeth."

12. Dr. E. M. Crough, Peterborough, Ont.—"Fixed Bridge Work with Inlay Abutments."

13. Dr. H. H. Cummer, Toronto, Ont.—"Profile Registrations as an Aid in Dental Prosthesis."

14. Dr. W. E. Cummer, Toronto, Ont.—"Partial Denture Design. (Members are requested to bring casts, radiographs, etc., of pr cases for design.)"

15. Dr. J. C. Devitt, Bowmanville, Ont.—"Gold Foil Fillings."

16. Dr. G. V. Fisk, Toronto, Ont.—"What the General Practitioner Should Know About Orthodontia."

17. Dr. E. A. Grant, Toronto, Ont.—Selected.

18. Dr. E. T. Guest, Toronto—"Semi-Indirect Technic for Gold Inlays."

19. Dr. J. W. Hagey, Kitchener, Ont.—"Copper Amalgam."

20. Dr. F. C. Husband, Toronto—"Copper Amalgam as a Root Canal Filling."

21. Dr. L. D. Kay, Kirkland Lake, Ont.—"Conductive Anæsthesia."

22. Dr. W. J. Kerr, Toronto—"Surgical Preparation of the Mouth for Full Dentures."

23. Dr. Margaret Kinsman, Sarnia, Ont.—"Children's Dentistry for the General Practitioner."

24. Dr. J. S. Lapp, Toronto, Ont.—"Restoratives."

25. Dr. W. J. Laker, Toronto, Ont.—"Operations for Correction of Protrusion Showing Models Before and After."

26. Dr. A. W. Lindsay, China—"Anatomical Studies."

27. Dr. A. J. McDonagh, Toronto, Ont.—"Mechanical Helps in Periodontia."

28. Dr. J. Aileen McDonagh, Toronto, to.—"The Use of Silver Nitrate in the Treatment of Children's Teeth."

29. Dr. L. E. MacLachlan, Ottawa, Ont.—"All Compound Impressions."

30. Dr. Mac. Sheldon, Toronto, Ont.—"Taking Impressions and Making a Matrix for Porcelain Jacket Crowns."

31. Dr. C. E. Pearson, Toronto—"The Technique for the Application of Iodine, Silver Nitrate or Formaldehyde about the Necks of Teeth for Gingival Inflammation or Sensitive Areas."

32. Dr. F. D. Price, Toronto, Ont.—"Round Table Interpretation of Dental Radiograms with Lantern." Bring your cases in practice.

33. Dr. J. E. Rhind, Toronto, Ont.—"Double Fracture of Mandible, Interdental Wire Retainer; Model and Roentengrams."

34. Dr. H. G. Robb, Toronto, Ont.—"The Surgical Removal of Teeth When Indicated."

35. Dr. J. A. Sherman, Toronto, Ont.—"A Combination of Gold and Silicate for Restoring Point Angles of Incisors."

36. Dr. L. G. Smith, Toronto, Ont.—"Root Canal Fillings."

37. Dr. W. G. L. Spaulding, Toronto, Ont.—“A Method of Rebasings Full Dentures in an Adequate Denture Service.”

38. Dr. A. S. Thomson, Toronto, Ont.—“Fitting and Finishing Inlay Castings on Amalgam Models.”

39. Dr. A. E. Webster, Toronto, Ont. and Dr. (Miss) Whitehead, Toronto, Ont.—“Methods of Sterilization.”

40. Dr. G. E. Westman, Midland, Ont.—“Orthodontia in General Practice.”

The Clinic Club of the London Dental Association was represented by Dr. J. F. Blair, Dr. H. R. Sykes, Dr. H. L. Windrim and Dr. J. O. McCutcheon, and gave a Clinic on the Proper Use of Amalgam.

The annual meeting of the Canadian Dental Hygiene Council was held at the Casa Loma Hotel, on Thursday at noon.

Thursday afternoon was given over to a Golf Tournament, held at the Weston Golf Club: A very enjoyable dinner meeting followed the tournament.

A number of the Dentists in attendance at the Convention attended the Annual Convocation of the Faculty of Dentistry, University of Toronto, on Thursday afternoon, and some were present at the annual meeting of the Alumni Federation, University of Toronto, at Hart House, on the same afternoon.

Notes

The Halifax dentists are to be commended for giving to the press in an impersonal way a full report of the doings of the dental meeting recently held in Toronto.

Dr. C. N. Johnson was the guest of his dental friends in Montreal on June 21st, 1928. He spoke on the subject of dental caries. The report said he was not yet convinced that the diet theory of caries was altogether satisfactory.

The Medico-Dental Building in Chengtu, China, has been dedicated to care of the Chinese people.

Nearly a hundred thousand people in the remote sections of Saskatchewan got free dental treatment from travelling dentists sent out under the auspices of the Canadian Dental Hygiene Council, during the months of March, April and May.

Dr. Lorne McLaughlan gave a clinic to the London Dental Society in June.

Dr. J. A. Neelands, Lindsay, Ont., was made an honorary member of the Ontario Dental Association. Dr. Neelands was in dental practice before 1861, having taken courses in dentistry in New York. In 1868 he obtained a license in Ontario. Dr. Neelands was the first in Ontario to administer gas for the painless extraction of teeth. Dr. Neelands is still in practice and in good health.

The Canadian Army Dental Corps has gone to camp at Niagara Falls, Ontario.

The American Dental Trade Association held its annual meeting in Quebec City, June 26, 1928.

There are 2,000 women practising dentistry in the United States.

The Woman's General Hospital, Montreal, has established a dental department for both in and out patients.

The Canadian Dental Association

The Canadian Dental Association has been re-organized. It is confidently expected that those who under the former basis of organization took an active interest in, and made valuable contributions to the Society, will continue to do so, and that many others may be induced to become associated with the various activities of the organization. There are well over three thousand ethical dentists in this Dominion, and if we join together in a sincere endeavor to elevate the standards of Dentistry, and improve its service rendering power, we will achieve results which will be well worth while.

Under the present plan the business of the Society will be managed by a board of delegates, composed of one delegate from each province, and an additional one from Ontario and Quebec. These delegates will be selected by the dentists of their respective provinces, and in this way the board of delegates, will in a most democratic way represent the profession of dentistry in Canada.

The board of delegates is now actively engaged in drawing up a programme of work, and in selecting committees to undertake the direction of the various activities, and the delegate from each province would welcome suggestions from any dentist in his district in regard to matters which should receive the consideration of the board.

It is the intention of the board of

delegates to keep the entire profession well informed in regard to its work, and for that purpose a publicity committee has been appointed. Short articles setting forth the accomplishments of the Association will appear regularly in the Journals.

The officers of the association are: President, Dr. Fred J. Conboy, Toronto, Ont; president-elect, Dr. M. H. Garvin, Somerset Bldg., Winnipeg, Man.; secretary-treasurer, Dr. J. Stanley Bagnall, 77 1/2 Larch St., Halifax, N. S. Delegates: Dr. Emery Jones, New Westminster, B. C.; Dr. John W. Clay, 84 Herald Bldg., Calgary, Alta.; Dr. A. J. Brett, Regina, Sask.; Dr. J. F. Morrison, 403 Medical Arts Bldg., Winnipeg, Man.; Dr. D. P. Mowry, 127 Stanley St., Montreal, P.Q.; Dr. Phillippe Hamel, 6 d'Aiguillon, Quebec, P.Q.; Dr. J. M. Magee, St. John, N.B.; Dr. F. E. Smallwood, Charlottetown, P. E. I.; Dr. A. . Faulkner, 69 Gottingen St., Halifax, N. S.; Dr. Harold Clark, Temple Bldg., Toronto, Ont.

The Toronto Mail and Empire steps out into the field of dental critic by saying that because a young woman died following the extraction of teeth the operation was clumsily done or the teeth should not have been extracted at all. The paper forgets that the patient had a choice of what was to be done. There is no evidence given that the operation was clumsy or unnecessary.

Toronto Dental Assistants' Association

The regular monthly meeting of Toronto Dental Assistants' Association was held at Willard Hall, with Miss Alta Aitken presiding. The convener of the nominating committee, Miss M. Gertrude Wiggins, presented the newly-elected executive, as follows: President, Miss Alta Aitken; vice-president, Miss Elizabeth

Hagan; recording secretary, Mrs. Marion Edwards; corresponding secretary, Miss Kathleen James; treasurer, Miss Jean Laing; social convener, Miss Ethel Tarrie; publicity, Miss Edith Brown; college representative, Miss Anna Lindsay; representative for the officers, Miss M. Nolan; school representative, Miss Hill.

At the joint convention of the Canadian and Ontario Dental Association held last year, a resolution deploring the present condition of the Canadian Army Dental Corps was presented, and it was unanimously decided that every effort should be made to have the organization placed upon a basis in keeping with the position of Dentistry as an independent and honourable profession. We feel that this matter will receive prompt and intelligent attention from the Committee, and that the profession as a whole, will know the full weight of its influence behind their efforts.

Other important committees are now being organized, and an announcement in regard to them will be made within a short time. In the meantime the executive will welcome suggestions in regard to the work which might be undertaken. These can be sent to the Secretary, J. Stanley Bagnall, 34 Larch St., Halifax, N.S., or to the President, Fred J. Conboy, Parliament Bldgs., Toronto, Ont.

Dr. W. L. Holman, Department of Pathology and Bacteriology, U. of T., speaking on "Dental Infection and Mouth Sepsis," advanced the theory

that the Scottish poet Burns died of poisoning from bad teeth, as he was known to have been a victim of toothache during most of his life. He died at 37, and "his death was no doubt hastened by the bacterial poisoning from mouth infection," said Dr. Holman.

Hon. Dr. Forbes Godfrey, Minister of Health for Ontario, announced today that his department has arranged for travelling dentists to provide dental treatment for people living in the remote sections of Ontario.

A dentist will start from Sudbury and visit the districts between that point and Sault Ste. Marie. He will travel by motor car and carry a portable equipment. Other clinics will be conducted in the districts around Port Arthur and further west of Rainy River.

It would appear that the B. C. College of Dental Surgery may not prosecute a dentist though his certificate is wrongfully obtained. It seems that action was taken against a dentist for practising without a license, but by the time it came to trial he had a licence by some strange procedure.

CORRESPONDENCE

Dr. Leslie McIntyre,
Edmonton, Alta.

Dear Doctor—You may be interested for the Dominion Dental Journal in a few notes on Dr. Switzer's clinic.

Dr. Switzer held a most successful clinic in Lethbridge, April 14th to 17th. While not as many outside men attended as expected, Lethbridge city men turned out almost 100 per cent. Dr. Switzer carried through from start to finish, one case full upper and lower dentures, and ground in three other cases. Dr. Switzer has aroused great interest in better denture construction.

The men present showed their appreciation in a tangible way, by a small gift at the dinner on the final evening.

Yours fraternally,
L. T. ALLEN.

July 9, 1928.

Dr. A. E. Webster, M.D.S., M.D.,
Toronto, Ont.

Dear Dr. Webster:

Among the many problems which have arisen during the first two weeks of practice I would like to ask your advice about one of them.

I extracted three teeth for a farmer, about 55 years of age, who appeared in good health. For the three teeth I used one and a half carpules of Waites anaesthetic. The extraction was carried out without any trouble. About one and one-half hours after the extraction while driving home he noticed that his face was breaking out in red spots which on arrival home had become large red blotches which spread down his neck to his chest and an equal distance down his back.

According to his description they were very much like hives. These disappeared in about two days, but the

region of the injection, namely upper bicuspid and cuspid region remained dark for some time.

I have three more to extract to complete the operation and not having a gas machine I wondered if it was advisable to use ether in preference to another local.

Yours very truly,

Editor: Will some of the readers of the Dominion Dental Journal report similar cases and their experiences with them?

I had a case, history commencing last October, to be exact, the beginning of the World's Series, of a local bank manager, age about forty, with lower teeth all in good condition, an odd filling, no devitalizations and with slight recessions of gum tissue. As the case developed I was in consultation with other men and finally I took him to the hospital. An acute infection with no apparent cause had commenced in the region of the lower second bicuspid; this spread to the other side in the same region about two weeks after. There was considerable pain, much destruction of tissue, the second bicuspid was extracted and, later on, after being under hospital care, the process around both lower cuspids was completely gone and teeth were simply lifted out. Destruction of tissue went on for, I should say, about three months, and at various times in the region of lost teeth, fairly large sequestria of bone were removed that were completely honey-combed by the disease. This has now subsided and the remaining teeth, which were quite loose, are now tightening up. This patient was given elaborate blood and bacteriological tests, and, I understand, was found to be physically in No. 1 condition. The case is likely one of alveolitis.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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Vol. XL

TORONTO, AUGUST, 1928

No. 8

New Regulations of the Dominion Dental Council

The Dominion Dental Council has just issued a report of its recent meeting held in Toronto. Several changes were made in the constitution, most of them of very great import. These changes are hard to understand when printed as amendments to sections. To make them more clear we print the original, followed by the amendment, and try to determine the consequence of the amendment.

The President's report is printed on page 247 of this issue. There were minor changes made in the report by the Council for publication.

CONCERNING CLASS D. EXAMINATIONS

Section 14, Subsection (b) of Class D, reads as follows in the constitution (6) Regular, legal, ethical practise in Canada for at least five years prior to the date of application for examination. This was made to read as follows by the amendment, (b) Regular legal ethical practise in one of the agreeing provinces and produce evidence of matriculation qualification equal to that required for applicants for Class A examination.

This means that while formerly candidates from any part of Canada were eligible for Class D. examination, both as to residence and matriculation, they are not now eligible. Such candidates must reside in an agreeing province for five years and hold a matriculation certificate of present-day standing. Such a requirement should prevent dentists from moving from one province to another by the D.D.C. route.

CANDIDATES WHO FAIL

The constitution reads as follows: Section 30—Candidates who pass all of the examinations, written and clinical, upon two-thirds of the subjects, will be exempt from re-examination on these subjects.

(a) In case any applicant under Classes A, C and D fail to make the required percentage on any paper or papers not exceeding two, upon demand he shall be given a supplemental examination within three months of the date of the publication of the results, the fee for such supplemental examination to be ten dollars for each paper if such paper be set at other time than the date of the regular examination. In case the examination be taken at the regular examination then the fee shall be five dollars per paper, this regulation to apply only for the failure upon final examination.

(b) Any candidate who fails by not more than five marks on not more than two subjects may have his paper reread free of charge. In case an applicant fails entirely to pass the examination under class D, one-half of the fee shall be refunded.

THE AMENDMENTS

Moved and seconded that all supplementary examinations be discontinued and that all applicants who have failed in the regular examinations be required to take the regular examinations. Carried.

Moved and seconded that Clause A, Section 30, as printed above be deleted and the following be substituted therefor.

In case any applicant under class A and D fails to make the required percentage on any paper or papers, not exceeding two, upon demand he shall be given a supplemental examination on the date of the regular examination. The fee for such regular examination be ten dollars per paper.

By the first of these resolutions supplementary examinations are done away with, and by the second, supplemental examinations can be demanded by the candidate. By deleting subsection A of section 30 the candidate cannot demand an examination within three months of the publication of the results. There ought to be a definition of "supplementary" and "supplemental" as applied to examinations. In this case there is no need of using the terms at all. There are now two regular examinations and it matters not whether the candidate has written once, twice, or a dozen times. He applies, pays his fee, writes, fails, or passes.

ADJUSTING EXAMINATION PAPERS

Moved and seconded that the secretary be empowered to make adjustments in the examination papers as in his opinion are advisable. CARRIED. We wonder!

MATRICULATION

We prize most highly that which we haven't. So we prize a high standard of cultural education for matriculation in professional education. It was seriously discussed that the D.D.C. should no longer concern itself with standards of matriculation but give its attention to professional education only. And yet much time of the Council concerned itself, and rightly so, with this important subject.

Section 18, subsection (a). Preliminary examinations of or matriculation into any institution in Great Britain or Canada recognized for the purpose of matriculation in medicine or dentistry by the General Medical Council of Great Britain.

It was moved and seconded that subsection A of section 18 be deleted and the following be substituted therefor.

Registration as a student in medicine or dentistry by the General Medical Council of Great Britain.

This means that the candidate must have in his possession a certificate of registration in the General Medical Council of Great Britain, while formerly he might register in Canada on a certificate which was registerable in Great Britain. It just means that the candidate is asked to pay for a certificate which he doesn't need. It might be worth while to find out if the General Medical Council grants certificates to be used before another body.

EVALUATION OF CERTIFICATES

Moved and seconded that the constitution be amended by adding the following to section 18.

For students commencing the study of dentistry after January 1st, 1929, the D.D.C. will receive matriculation into the faculty of Arts of any provincial university of Canada or other approved university of equal standing. Such certificates granted by the department of the agreeing provinces shall be submitted to the university of the province concerned for evaluation for entrance to the faculty of arts.

We presume the council meant department of education when they said department. It is expected that the university in the province in which certificates of education are issued will determine their value for matriculation in arts. This means another fee for the candidate.

DENTAL STUDENTS MUST ATTEND SIX CALENDAR YEARS

After August 30th, 1928, satisfactory proof to show that applicant is a bona fide student of dentistry in a recognized Dental School which requires a six year course. A six year course is interpreted to mean six calendar years beyond Arts matriculation based on high school graduation. These six years must be either upon the one five or the two four plan.

This was carried by resolution.

This is rather a sweeping change in dental education. Why not a six naught plan? It not only adds eighteen months to the present course but in addition because of awkward dates of matriculation reports and the beginning of the dental courses another year is lost. For example, a candidate who expects to study dentistry receives his certificate of matriculation usually in August or September. This allows him to register in dentistry at the opening of college in October, but if he must put in six calendar years without loss of time the date of graduation would need to be changed from June 1st to October 1st, or lose a year of time. University education the world over would be out of step with the D.D.C. Or in other words "they are all out of step but my son Jock." What a price to pay for a D.D.C. certificate? If a provincial license can be had by following the regular courses given in universities, why take a D.D.C.? Six calendar years would produce a dentist, but kill a man. (Born a man and died a groser.)

On the next page of the minutes appears this resolution. If any Dental School in the agreeing provinces wishes to provide a course of five years with two summer sessions which will be considered by the

conference of Canadian Universities as equivalent to a year it shall be acceptable to the D.D.C. Carried. This does not state that the year is an academic year or a calendar year. How could five years be the equivalent of six years in the matter of time? It could easily be the equivalent in the matter of education, but the council has set the time to be six calendar years and anything less could not be acceptable.

A very great deal could be said for and against many of the changes in the constitution which were just made, but a constitution which is so flexible that it can be changed at any time and without notice leads to disrespect for law and order. See section 48. In looking over the minutes, as we have, we do not wish to be critical but helpful, we have said nothing about the merits of the changes, but we do think that some legal authority should codify the constitution, by-laws, rules and regulations before they are sent out.

WANTED—Partnership with ethical practitioner. Applicant has had 10 years' experience. Would consider purchase of practice of not less than \$5,000 yearly income. Box 57, Dental Journal, 73 Richmond W., Toronto.

FOR SALE—Eastern Townships practice doing \$3,500 yearly, modern equipment, no opposition, rent very low. Box 58, Dental Journal, 73 Richmond W., Toronto.

FOR RENT—Dental office in good town on main highway. Has been occupied by dentist for about seven years. Good opening as dentist is retiring for special reasons. Possession about Sept. 1st. Box 59, Dom. Dental Journal, 73 Richmond W., Toronto.

A DENTAL MECHANIC, an expert all round man, familiar with porcelain work and removable bridge work required in Calgary, Alberta. Reply, stating experience and salary expected, to Box 56, Dental Journal, 73 Richmond W., Toronto.

FOR SALE—Dental office in good western town, doing about \$4,000 cash yearly. Equipment nearly all new. Will sell cheap. For terms apply to Box 56, Dominion Dental Journal, 73 Richmond W., Toronto.

WANTED—Dentist five years in general practice wants to connect with one or two other dentists in Ontario city who have X-ray and porcelain equipment, in the one office, and room for him to do gas and extraction work. Can furnish own equipment and finance himself. Write Box 60, Dominion Dental Journal, 73 Richmond W., Toronto.

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gree that it is copious, fluid and alkaline does saliva serve as natural mouth wash and protective fluid.

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The Hyatt Study Club

In the fall of 1927, at the instigation of Dr. Thaddeus P. Hyatt, a group of men met to consider the possibility of evolving an operative procedure for the prevention of caries. The regular monthly session were productive of much interesting discussion and certain more or less established data were formulated as a working basis.

A. That enamel is the hardest tissue in the human body, composed for the most part of inorganic substance and that its chief function is to serve as a protective covering for the more vital tissues of dentine and pulp against bacterial, mechanical, chemical and thermal irritants.

B. That the enamel is completely formed prior to the eruption of the tooth; the enamel producing cells, the ameloblasts, becoming completely atrophied, and for that reason the enamel, unlike the dentine does not possess the very important property of repairs.

C. That constitutional conditions will influence changes in the dental tissues and particularly nutritional deficiencies and parathyroidal dysfunction, in that the bodily reserve of calcium salts may become diminished and may thereby diminish the calcium content of the dental tissues, lowering their general tone and perhaps making them more prone to bacterial invasion.

D. That the smallest opening in the enamel is conducive to a bacterial colonization and invasion.

E. That pits and fissures are natural defects, evidences of improper coalescence of the primary parts.

F. That based upon the statistical evidence of an examination of about 19,000 mouths at the Metropolitan Life Insurance Company under the direction of Dr. Thaddeus P. Hyatt, by far the largest number of carious cavities

have their origin in pits and fissures and for that reason the adjective "pre-carious" was prefixed to pits and fissures by the unanimous consent of the Hyatt Study Club.

G. That caries appears to progress much more rapidly in dentine than in enamel and therein lies the greatest danger of pre-carious pits and fissures, in that the dentine may be appreciably destroyed before there is any marked destruction of the enamel at the point of entrance.

H. That to establish an operative procedure that would eliminate pre-carious pits and fissures would prove to be a definite step in the direction of preventing a large proportion of carious cavities.

Prompted by the above data, the following plan of investigation was adopted:—

1. To standardise the terminology to be employed in connection with prophylactic odontology.

2. To evolve a comprehensive diagnostic procedure for the detection of pre-carious pits and fissures and to determine the age at which the operative procedure should be instituted.

3. To evolve an operative procedure that will necessitate the removal of the least amount of tooth substance and yet, at the same time, secure the maximum amount of protection for the dentine and pulp.

4. To standardize the instrumentation.

5. To standardize the filling material.

Three sub-committees were appointed to carry on these investigations. The Hyatt Study Club believes it is desirable to secure the co-operation of all members of the dental profession throughout the world who are interested in the possibilities of pro-



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phylactic odontology and therefore cordially invites them to correspond with us.

All letters to be addressed to the Secretary, Dr. Joseph E. Kauffman, 110 East 54th Street, New York City.

Publication Committee:

LeRoy L. Hartman, D. D. S.

Maurice William, D.D.S.

M. Diamond, D.D.S., Chairman.

Prof. R. C. Wallace, of the University of Manitoba, has been appointed president of the University of Alberta to succeed Dr. Tory, who goes to Ottawa to take charge of national research.

Alberta has appointed a public health committee to assist the board of health. The members of the dental advisory board are Drs. J. S. Stewart, Lethbridge, L. D. McLaurin, Edmonton, and the president of the Alberta Dental Association.

The provinces of the Dominion are supporting the Canadian Dental Association in a most enthusiastic manner. Word has been received that several have already voted membership fees for all the ethical dentists on the Register. Such prompt action is most encouraging and will inspire the officers to do their best so as to prove worthy of the confidence placed in them.

The most pleasing announcement of the month is that Dr. Walter G. Thompson, has consented to act as chairman of the committee in connection with the Canadian Army Dental Corps Establishment. Col. Thompson will be remembered by all the dentists of Canada because of his excellent work in the interests of dentistry, when in command of the Corps of his Military District. He has full knowledge of military matters, knows the establishment that we have a right to expect, and has the enthusiasm and energy that will see that we get it.



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MONTREAL

DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

OFFICIAL ORGAN OF LEADING DENTAL ASSOCIATIONS IN
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Editor. A. E. WEBSTER. D.D.S.. M.D.S.. M.D.

Honorary Dean Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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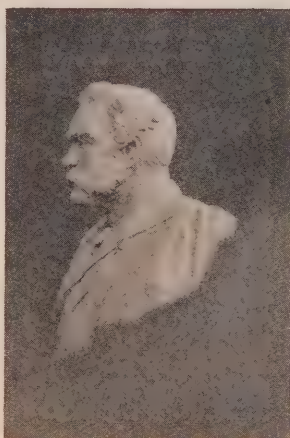
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Dominion Dental Journal

Vol. XL

TORONTO, SEPTEMBER, 1928

No. 9



Bust of J. Branston Willmott,
D.D.S., M.D.S., LL.D., Dean of
the Royal College of Dental
Surgeons, 1876-1914, by Dr. C.
E. Pearson, Toronto.

Presentation of Bust of the Late J. Branston Willmott, M.D.S., D.D.S., LL.D.,

C. E. PEARSON, D.D.S., LL.D.S.

Toronto, June 6th, 1928.

Mr. President, Ladies and Gentlemen,
and Mrs. J. B. Willmott,—

It is with a great deal of pleasure and yet a great deal of diffidence I come before you to make this presentation to Mrs. Willmott. In 1900 and 1901 I gave considerable attention to clay modelling and at that time completed a bust of the late W. C. Barrett Dean of the Dental College of Buffalo and the late H. T. Wood, member of the Board of Directors of the R. C. D. S. whose bust has been in the library for the past twenty years. Since then I have helped to model two fine boys—but they are pretty lively clay and too life-like for statuary. So that when Dr. C. A. Kennedy suggested our late dean as a subject worth attempting it was undertaken with much misgiving and apprehension that perhaps one's hand and eye had lost the touch and the result might be not only unlike the subject but far from pleasing as an artistic bit of work.

You will realize therefore that it was an effort of considerable daring

and must be considered entirely as an experiment. How well it has turned out it is not for me to say but for you who knew Dean Willmott and can recall his features and his characteristic expression.

Dr. Kennedy wanted this model of the Dean because in visiting some of our American schools he noticed the art value of such historic personalities and it is my fond hope that it may be the nucleus of a collection for our own library. You are all invited to contribute. For I am sure there are many potential artists in the dental profession and I hope some day we may have a valuable collection proving the truth of this statement.

The effort it has been for me to make this model has been one of unalloyed joy and I feel that, had I neglected the opportunity and performance, I would have lost one of my supremest pleasures. It is therefore with fond recollections of our revered late Dean and with considerable emotional misgivings as to your reception that I unveil this bust and present it to Mrs. J. B. Willmott.

Presentation of Painting of A. E. Webster

C. E. PEARSON, D.D.S., L.D.S.

In the halls of fame it is the custom of our race to hang the portraits of our great and noble men,—kings and princes, lords and governors, soldiers and sailors, merchant leaders and social workers and greater than all of these our worthy teachers and beloved fellow citizens.

It is a simple matter for a man of means to have his portrait painted by a famous artist, but to be selected by one's associates and have this honor thrust upon him is a signal event in the life of any citizen. It is a joyous custom. It is a happy tribute. It not only is an honor to him, but a cause for rejoicing in his family. It not only perpetuates his personality but it warms the hearts of his children's children as they gaze upon his noble features and say "Here was a man among men"; "Here was a man blessed by the Gods."

What we are about to do today is to unveil the portrait of one among us renowned for his ability as the greatest teacher of our professional principles and professional ethics in Canada. And not only in our own country but throughout the British Empire, the United States and the whole of Europe is his reputation known and lauded by the well-known dental teachers. Born in Ontario and educated in our schools his thirst for knowledge and ambition for service carried him through the channels of the teaching profession into that of Dentistry and he entered Chicago Dental College from which he graduated in 1893. Here he came under the influence of the late Trueman, W. Brophy, C. N. Johnson, Thomas Gil-mour and Frederick Noyes Calvin S.

Case, W. C. Barrett and Harlan and not the least of these great men was the influence of the life and work of G. V. Black of the North Western University. He came to Canada and to the R. C. D. S. as demonstrator in the Fall of 1893 and took his L. D. S. here in 1894.

With a clear logical mind and a sound understanding of the principals of Psychology and Pedagogy and a knowledge of the scientific efforts of the times, he inaugurated here the technical training which has made modern operative dentistry the expert practical science that it is. And how many among us in this room today will remember the Louisa Street planing mill, with our smiling genial demonstrator and his vest pocket mirror. Those were the days: And his was a leading influence in the change from conditions as they then were to present times where every student now has his own sterilizer. And the smile and the genial indirect questioning and the keen intelligent deductions still characterize the man and mark him as a professor, alert, versatile, sympathetic and with a rare sensitiveness for the feelings of his pupils.

Dissatisfied with his preparation he soon returned to Chicago, entering Rush Medical College, graduating in 1898, with the Medical degree of the Chicago College. During this period he spent many hours weekly with the late lamented G. V. Black.

In 1902 he became professor of Orthodontia..

During this period his work as Editor of the Dominion Dental Journal brought him into touch with the

best minds and characters in the field of journalism as well as those in the association of Dental Pedagogy.

And during all this period from the early nineties to '07 his love of his native land, his ambition for Canadian Dental institutions and relations abroad prevented him from accepting many a tempting offer as scholar and teacher and recognition and honor abroad. Had he not then been ambitious for Canada, we would not now be unveiling his portrait.

Need I dwell further upon his past. We have all watched it. We have been instructed and enthralled by his public utterances on dental subjects. In all the length and breadth of our broad Dominions he has no peer on the platform. His grasp of the rela-

tionship of medicine and dentistry and of both to the sciences as taught today was undoubtedly felt and instrumental in bringing about our present happy University connection.

On the passing of Dean Willmott in 1915 he was chosen as a most worthy follower.

What more may I say? Revered as a teacher, genial and lovable as a golfer, keen and successful as an agriculturist, respected, revered and honored as a professor; it is an honor deeply felt by me and a pleasure such as I had not expected to enjoy, to represent the Board of Directors of the R. C. D. S., and to present this portrait by Mr. E. Wylie Greer to Our Honorary Dean.

—Albert Edward Webster.

Dominion Dental Council Examinations

The following have passed their Dominion Dental Council Examinations in the following subjects.

Pathology and Bacteriology—J. F. Brock, B. Claman, L. Davis, M. A. Deagle, U. P. Gruer, L. D. Haselton, G. Kingman, F. A. Kohli, J. C. Lindsay, J. A. Maybe, J. M. McBrien, H. M. McCaffery, M. S. Priest, N. G. Snodgrass, A. A. Somerville, F. J. Stodgell, F. K. Switzer, J. M. Warren, P. Zakus.

Pathology (only)—L. D. Carmichael, J. C. Dempster, S. C. Layter, A. M. Revell, H. M. Robb, Donald Smith.

Bacteriology (only)—F. M. Hall, H. A. Galsky, R. Harrington, A. W. Irwin, B. Johnson, S. L. Portigal, C. L. Skinner, O. B. Whitman.

Medicine and Surgery—P. G. Anderson, J. F. Brock, H. A. Carman, L. D. Carmichael, H. M. Corlett, M. A. Deagle, J. C. Dempster, G. M. Dewis, C. A. Findlay, J. H. Graves, N. A. Greenberg, G. C. Hare, L. D. Haselton, C. D. Husband, G. C. Laytor, A. Leith, J. C. Lindsay, J. P. Millar, H. F. Mof-

fatt, J. M. McBrien, H. M. McCaffery, H. B. Powell, H. M. Robb, Donald Smith, W. G. Snodgrass, F. J. Stodgell, F. K. Switzer, J. E. Tilson, J. A. Tupper, P. Zakus.

Operative Dentistry—J. F. Brock, H. A. Carman, L. D. Carmichael, H. M. Corlett, M. A. Deagle, J. C. Dempster, G. M. Dewis, C. A. Findlay, J. W. Gerrie, Faust Gowda, J. H. Graves, N. U. Greenberg, G. C. Hare, L. D. Haselton, C. D. Husband, A. W. Irwin, G. C. Layter, A. Leith, J. I. Lesik, J. C. Lindsay, J. P. Millar, H. F. Moffatt, J. M. McBrien, H. M. McCaffery, H. B. Powell, H. M. Robb, Donald Smith, W. G. Snodgrass, F. J. Stodgell, F. K. Switzer, J. E. Tilson, J. A. Tupper, P. Zakus.

Anaesthetics—J. F. Brock, B. Claman, Lloyd Davis, M. A. Deagle, G. M. Dewis, H. A. Galsky, J. W. Gorrie, Faust Gowda, W. P. Gruer, F. M. Hall, L. D. Haselton, G. Kingman, J. I. Lesik, J. C. Lindsay, J. P. Millar, A. B. Morrow, J. A. Maybe, H. M. McCaf-

fery, S. L. Portigal, Priest, Lloyd Skinner, Donald Smith, W. G. Snodgrass, F. J. Stodgell, F. K. Switzer, J. A. Tupper, J. M. Warren, O. B. Whitman, P. Zakus.

Materia Medica & Therapeutics—P. G. Anderson, H. E. Armstrong, A. H. Bernstein, J. F. Brock, J. F. Brown, L. D. Carmichael, J. P. Coupland, M. L. Craig, M. R. Culbert, M. A. Deagle, W. F. Dewar, W. G. Fraser, J. W. Gerrie, Faust Gowda, O. G. Hall-dorson, F. E. Harris, C. D. Husband, J. I. Lesik, H. I. Levinson, J. A. May-bee, H. M. McCaffery, C. J. Paterson, H. B. Powell, Donald Smith, F. J. Stod-gell, F. K. Switzer, J. M. Warren, P. Zakus.

Prosthetic Dentistry—J. F. Brock, H. A. Carman, L. D. Carmichael, H. M. Corlett, M. A. Deagle, J. C. Demp-ster, G. M. Dewis, C. A. Findlay, J. W. Gerrie, Faust Gowda, J. H. Graves, N. U. Greenberg, G. C. Hare, L. D. Haselton, C. D. Husband, A. W. Irwin, G. C. Layter, A. Leith, J. I. Lesik, H. R. Lindsay, J. P. Millar, H. F. Moffatt, J. M. McBrien, H. M. McCaffery, H. B. Powell, H. M. Robb, Donald Smith, W. G. Snodgrass, F. J. Stodgell, F. K. Switzer, J. E. Tilson, J. A. Tupper, P. Zakus.

Materia Medica (only)—I. I. Green-berg, R. Harrington, A. B. Ingemund-son, Max Maclinow, C. S. Robertson, E. Shapera.

Physiology & Histology—M. H. Boy-kowich, H. E. Clark, O. G. Halldorson, R. Harrington, J. I. Lesik, P. Zakus.

Physiology (only)—F. J. Brown, M. L. Craig, M. R. Culbert, D. M. Dairson, W. F. Dewar, W. G. Fraser, I. I. Greenberg, F. E. Harris, B. Johnson, K. I. Levinson, M. Maclinow, J. H. Merrell, C. J. Paterson, Marion Priest, C. S. Robertson, E. Shapera.

Histology (only)—J. J. Armstrong, H. G. W. Ball, A. Bernstein, N. L. Bon-nell, L. J. Brohman, C. W. Burnett, W. C. Cobban, L. J. Conn, Coupland, R. E. Diprose, A. Golden, A. D. Goldin,

W. H. Herron, I. L. Hyman, L. M. Leith, H. R. Lindsay, C. A. Lumsden, E. S. McCartney, J. Martin, C. T. Mason, A. Mayse, G. A. Mickle, A. C. Mills, R. F. Rogers, S. C. Shantz, R. L. Twible, J. M. Warren, P. Zakus.

Orthodontia, Jurisprudence and Ethics—P. G. Anderson, J. F. Brock, L. Davis, G. M. Dewis, J. W. Gerrie, F. Gowda, W. P. Gruer, G. C. Hare, L. D. Hazelton, C. D. Husband, A. W. Irwin, G. Kingman, F. A. Kohli, A. Leith, J. I. Lesik, M. Maclinow, J. H. Merrell, J. P. Millar, H. F. Moffatt, H. B. Powell, Marion Priest, H. M. Robb, Donald Smith, W. G. Snodgrass, F. J. Stodgell, J. A. Tupper, J. M. Warren.

Orthodontia (only)—A. A. Somer-ville, F. K. Switzer, O. B. Whitman, P. Zakus.

Jurisprudence & Ethics (only)—L. D. Carmichael, J. C. Dempster, G. C. Layter, J. C. Lindsay, H. F. Moffatt, J. M. McBrien.

Anatomy—J. J. Armstrong, H. G. W. Ball, Donald Black, N. L. Bonnell, L. J. Brohman, C. W. Burnett, H. E. Clark, W. C. Cobban, L. J. Conn, D. M. Dairson, R. E. Diprose, A. Goldin, R. Harrington, W. H. Herron, I. L. Hyman, A. W. Irwin, A. Leitch, L. M. Leitch, J. C. Lindsay, C. A. Lumsden, E. S. Macartney, H. A. Malcove, J. Martin, C. T. Mason, G. A. Mickle, A. C. Mills, R. F. Rogers, S. C. Shantz, R. L. Twible.

Physics, Chemistry and Metallurgy—A. H. Bernstein, I. F. Brown, M. R. Coupland, M. L. Craig, M. R. Culbert, W. F. Dewar, W. G. Fraser, O. G. Hall-dorson, F. E. Harris, A. B. Ingimund-son, K. I. Levinson, M. Maclinow, J. H. Merrell, J. A. Maybee, C. J. Patter-son, C. S. Robertson, E. Shapera.

Passed in Chemistry and Metallurgy—H. M. McCaffery.

Passed in Physics and Metallurgy—H. E. Armstrong.

Passed in Chemistry—M. A. Deagle.

Studies in Preventing Failure of Operative Restorations

H. A. Ross, D.D.S., Toronto.

IDEAL	FAILURE	CAUSE	REMEDY
(a) Protect pulp from thermal shock.	Pain from heat or cold.	Thermal conductivity of metal. Hyperaemia of pulp. Gingival recession.	Use filling material of low thermal conductivity. Nurse with anodynes. Cauterize.
(b) Galvanic shock.	Slight electric shock when jaws are closed.	Current due to difference in potential between metals and favorable electrolyte.	Change nature of saliva electrolyte. Varnish fillings. Avoid contact of gold and silver. Allow oxidation to take place.
(c) Ingress of air, water or bacteria.	Leaky fillings darkened areas, zones of decay-spaces. Broken margins.	(a) Poor technic of insertion. Insufficient packing, tamping, plugging, condensation, burnishing. (b) Poor cavity preparation—too much bevel—bevel insufficient. (c) Deep carvings in amalgam. (d) Solution of cement at margin of inlays.	Proper manipulation of materials. Proper cavity preparation.
2. Protect dentine from erosion, attrition and bacterial invasion.	Exposed dentine left unprotected.	Failure to extend cavity outline.	(a)—Include exposed dentine within outline. (b)—Cauterize.
3. Protect surrounding tissues from trauma.	Pocket formation loss of septal tissue, Gingivitis, Periodontitis.	Failure to reproduce physiological anatomy to tooth. Improper finishing of margins of restorations. Inattention to occlusion.	Proper contact. Marginal ridges. Supplemental fossae. Bucco-gingival ridges. Sluiceways. Perfect joints. Smooth joints. Adjust occlusion.
4. Restore or improve masticating efficiency.	Disuse (whole or partial) of restored tooth. A functional occlusion.	Not enough attention paid to anatomy, carving occlusion, lateral interference. Flat occlusal surfaces.	Restore occlusal anatomy. Adjust occlusion. Recreate cusps. Marginal ridges, contacts, etc.
5. Prevent recurrence of caries.	Decayed area around fillings.	Conditions favorable to bacterial growth not eliminated.	Lay outlines in immune areas. Finish joints perfectly.
1. Must be made of strong material enough to do the work.	Fracture of silicate occlusal surface and incisal edges. Foil restorations breaking.	Material weak and friable. Poor condensation.	Choose more suitable material. Condense properly.

PERMANENCE		ESTHETIC VALUE	
1. Must not wear fast under brush or food. 2. Must resist dislodgment. 3. Must not dissolve in oral fluids. 4. Must not wear fast under brush or food.	A m a l g a m restoration, breaking at neck of dove-tail. Marginal ridges breaking away. Soft gold inlays flowing, under stress. Gold inlays bending at narrow places.	Material weak, cavity not well prepared. Ridge too thin for friable material. Gold too soft or not thick enough.	(a) Reinforce amalgam with wire. (b) Widen or deepen neck. Carve ridges thicker. Use harder gold. Use harder gold. Proper cavity preparation.
	Torque. Fillings loosen and drop out.	Poor resistance-form—poor retention-form. Anchorage break.	Proper cavity preparation. Protect remaining tooth structure.
	Silicates and cements dissolving.	Poor manipulation. Condition of oral fluid.	Improve technic of mixing and inserting. Choose different material.
	Surfaces worn or discolored. Gold crowns wearing against porcelain.	Material poorly mixed. Porcelain left rough. Thin occlusal surface on crown.	Select more resistant materials. Heavier occlusal surfaces. Polish.
1. Must have pleasing form. 2. Color must correspond with that of tooth. 3. Color must harmonize with that of tooth. 4. Must be hidden from public gaze if possible.	Outlines, abrupt, harsh, irregular, or do not harmonize with form of tooth. Planes and surfaces not continuous with or in harmony with those of tooth and interfere with reflection of light.	Inattention to cavity outline. Proper contouring neglected. Improper finishing.	Care in design of outline. Strict attention to carving, moulding and finishing.
	Color matching poor.	Poor choice of material.	Use porcelain silicate fillings or veneers. Study shade.
	Contrast of color very marked.	Poor choice of material.	Use gold rather than silicate.
	Unsuitably displays of unnecessary gold, etc.	Faulty design.	Conserve tooth structure exposed to view. Line undermined enamel.

Why and Where Teeth Decay

A perfect set of teeth is among the rarest of natural phenomena. Among nearly twenty thousand Home Office employees of the Metropolitan Life Insurance Company who have received dental examinations in the last twelve years, only two sets of perfect teeth have ever been found. This fact is one of the by-products of the systematic statistical study of dental conditions carried out by Dr. T. P. Hyatt, Director of the Dental Division, with the collaboration of the Statistical Bureau of the Company. This study has revealed many interesting facts. Decay of teeth is not a matter of chance. Certain teeth, and certain particular surfaces of these teeth, are far more susceptible than others. This appears very clearly from the statistics, and the significant fact is that the surfaces found statistically to be especially subject to decay are the very surfaces which are known to dentists to have naturally weak points in their enamel—pits and fissures that exist from the time the tooth is formed. It

is in these natural crevices that bacteria find an ideal breeding place and produce dental decay. So marked is this feature that it has even been recommended that such natural pits and fissures should be cut and filled before any decay ever appears in them. At any rate the knowledge that decay appears constantly in specific locations should be a distinct aid to those in whose care rests a program of preventive dental hygiene.

Some of the results of the periodic examinations of the Metropolitan Home Office employees are exhibited in the table on this page and the chart on page 285. The table shows, for each of the five surfaces of the different teeth, the number of cavities that were found, per 100 erupted teeth. Teeth that had failed to erupt from the gums (a common condition especially for some of the teeth at the back of the mouth) were left out of reckoning, since they, obviously, are not exposed to decay, if present at all. On the other hand, for purposes of numerical

SUSCEPTIBILITY OF TEETH TO DECAY. MALES AND FEMALES UNDER 25 YEARS OF AGE. METROPOLITAN LIFE INSURANCE COMPANY. EXAMINATION OF 2,493 PERSONS. CAVITIES PER 100 ERUPTED TEETH. (CORRECTED FOR MISSING TEETH)

	TOTAL SURFACES	LINGUAL	BUCCAL	MESIAL	DISTAL	OCCUSAL
Centrals.....	33.3	1.5	.8	16.6	13.6	.8
Laterals.....	30.7	5.5	1.0	16.3	7.1	.7
Cuspids.....	14.3	1.0	1.9	4.3	6.2	.9
1st Bicuspids.....	50.0	.7	2.3	6.1	12.8	28.1
2d Bicuspids.....	72.2	.7	2.3	11.2	15.4	42.6
1st Molars.....	180.3	18.8	26.6	14.3	6.0	114.6
2d Molars.....	134.7	6.2	18.5	4.1	2.9	103.0
3d Molars.....	82.0	1.3	12.4	1.6	1.3	65.5

computation, missing teeth—that is to say, teeth that had been present but had been extracted, or that were decayed beyond recognition of individual cavities—were allowed for on a *pro rata* basis, charging them with the same number of cavities as were actually found, on an average, in the teeth of the same type that were still in the mouth.

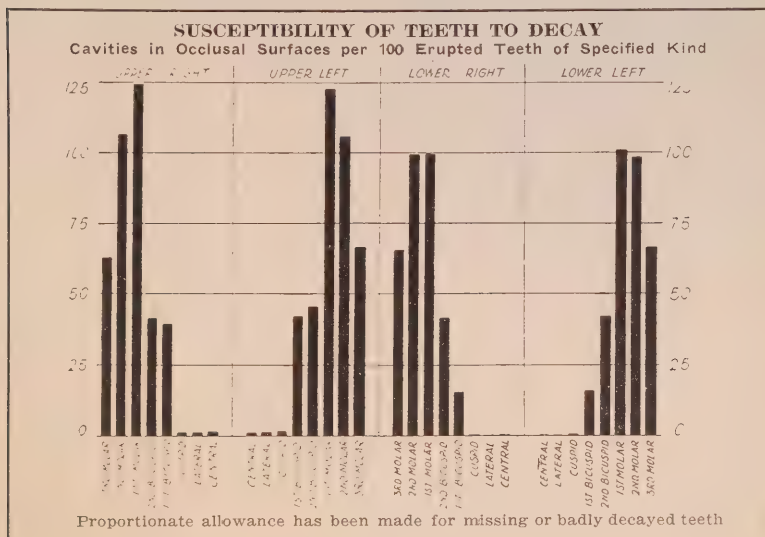
For the general reader not acquainted with the technical terms of dentistry an explanation of some of those that appear in the table and chart may be desirable. The five surfaces of a tooth are described as follows: *buccal*, the surface turned toward the lips or the cheeks; *lingual*, the surface turned toward the tongue; *mesial* and *distal*, the surfaces contracting with an adjacent tooth, the mesial being the one nearer the medium line of the jaw, distal that farther removed; *occlusal* is the biting surface.

The outstanding fact brought out by the table is that the occlusal surfaces of the first and second molars, both upper and lower, are by a large margin the most susceptible to decay. The first and second molars actually *average* more than one occlusal cavity per

tooth! The occlusal surfaces of the two upper bicuspid also have a high susceptibility, though less than half that of the first and second molars. The first bicuspid of the lower jaw, on the other hand, is fairly resistant on the occlusal surface. All these facts can be easily read off the accompanying graph, which shows only the figures for the occlusal surfaces. Of surfaces other than the occlusal, the only ones that rise to the level of 50 per cent. susceptibility are the buccal surfaces of the lower first molars.

The incisors (central and lateral, that is, the eight front teeth) are relatively resistant. What cavities they have fall almost exclusively on the mesial and distal surfaces; the lingual surfaces of the upper laterals, however, also rise above the general level of the otherwise rather resistant surfaces of the front teeth.

As to the third molars, it should be pointed out that all the persons included in this compilation belonged to a young age group (under 25 years), and that therefore the third molars (wisdom teeth) had not long been exposed to decay.



Deaths from Tuberculosis in Dusty Trades

Certain trades and occupations in which the workers are exposed to dust show much higher percentages of deaths from tuberculosis than do occupied males as a group. Notable among these occupations are miners (except coal miners), pottery workers, stone cutters and others. These facts are brought out by the analysis now being made of causes of death, by occupations, among white male Industrial policyholders of the Metropolitan Life Insurance Company (covering the years 1922 to 1924). The proportion of deaths from tuberculosis for miners (except coal miners) exceeds the average for all occupied males by 83 per cent., at the main working ages of life, 15 to 64 years. Pottery workers show an excess of 77 per cent., while stone cutters exceed the average by 44 per cent. Other occupations which in the past have experienced a high mortality from tuberculosis, show in this study percentages somewhat less excessive than those we have mentioned.

Seventy-two occupational classes were included in the analysis. Of these, 37 have a higher proportion of deaths from tuberculosis than the average for all occupied males. Thirteen classes have percentages which exceeded the average by 20 per cent. or more. The table on page 4 shows for these thirteen classes the proportion of deaths from tuberculosis for the years 1922 to 1924 and 1911 to 1913.

Silica dust is the predominant hazard discernible in five of the thirteen occupations, namely, miners (other than coal miners), pottery workers, stone cutters, cutlers and grinders, and polishers. The silica dust hazard also probably accounts for part of the excessive mortality of glass workers

and some brass foundry workers. The cause of the high mortality among compositors and tobacco workers is not clear. The specific hazards of lead absorption in the case of the former and tobacco poisoning with the latter have been suggested as possible explanations, but these hazards are not sufficient to account for the very considerable excess found for these workers. Faulty posture, which restricts free movement of the chest, plays an important part in the pulmonary disease of certain groups of sedentary workers, particularly cigar makers, who constitute a large portion of the tobacco workers. Furthermore, men physically unable to carry on other pursuits frequently select these sedentary occupations. Consequently, the mortality from tuberculosis is weighted by the excessive mortality among these workers. Work under unfavorable conditions of high heat, particularly if associated with high humidity coupled, as it so often is, with alternate exposure to cold, may be responsible in large measure for acute respiratory disease which, in turn, undoubtedly plays a part in the lighting up of quiescent pulmonary tuberculosis.

In any consideration of industrial tuberculosis it is of utmost importance that there be kept clearly in mind the economic and social factor involved. Wage levels, and standards of living probably play as large a part as any other single factor in the control of pulmonary tuberculosis.

It is encouraging to note that there has been a decline in the percentage of deaths for each of these occupations except miners (other than coal miners) between the years 1911 to

1913 and 1922 to 1924. These occupations have shared in the phenomenal decline in the mortality rate from tuberculosis which has occurred among men of the working ages dur-

ing the last fifteen years. In the age group 20 to 44, the tuberculosis death-rate among white male industrial wage earners is only one-third of what it was in 1911.

Automobile Fatalities in the Urban Industrial Populations of American States and Canadian Provinces, 1927

In the January Statistical Bulletin we announced that the deathrate for automobile fatalities had risen, in 1927, to a new maximum. This was the culmination of a continuously increasing deathrate over a long series of years. Three out of every ten fatal accidents of all kinds in the industrial populations of the United States and Canada, last year, resulted from the operation of motor vehicles. Furthermore, reports for the five elapsed months of 1928 show that this type of accident is occurring even more frequently than in 1927. Thus the situation is going from bad to worse with no indication whatever that a turn for the better is in sight.

Obviously, much interest attaches to the distribution of automobile fatalities throughout the United States and Canada. We are now able to supplement the facts published in January by showing similar data for more than 18,000,000 Metropolitan Industrial policyholders in the several states and the Canadian Provinces.

Rates are shown for both the white and colored policyholders, and there is not much difference in the gravity of the situation in the two races. The death rate for the negro policyholders in the United States, in 1927, was 17.2 per 100,000, as compared with 19.1 for the white. If it were possible to give separate figures for those killed by being *struck* by automobiles, it might

well develop that more negroes than whites, per 100,000 exposed to risk, lose their lives in this type of accident. Furthermore, the automobile deathrate has been increasing more rapidly in recent years among the negroes than among the whites. Comparison with a similar study for 1923 shows a 32 per cent. rise for the former, as compared with only 16 per cent. for the latter.

Another interesting item brought out in the table on page 7 is the death-rate for Canada. While this is still only a little more than half that for the United States, it has been increasing more rapidly in recent years, and automobile fatalities have become one of the important causes of death in several Canadian Provinces.

In the United States, the Mountain States and the South Atlantic region show the highest deathrate from this cause, closely followed by the Pacific Coast and the East North Central and East South Central groups. The rates for all other sections are below the average for the country, with the lowest figures in the West South Central States and in New England.

It is interesting to note that, despite the immense motor vehicle traffic of the cities of New York State, the deathrate for that Commonwealth is well below the average both for the country and for the adjacent states of

Connecticut, New Jersey and Pennsylvania. Other states with outstandingly high deathrates from this cause, among their urban industrial popula-

tion, were Idaho, Mississippi, Kansas, Florida, Michigan, South Carolina, Arkansas, Delaware, and North Carolina.

Health Record for May, 1928

Weather conditions during April and May were, in large part, unseasonable, and the unusually "late spring" of this year was possibly a factor in the high deathrate for May. Among the more than 18,000,000 Industrial policyholders of the Metropolitan Life Insurance Company, the May deathrate was 10.4 per thousand. This is the highest mortality figure on record for any May since 1919, when the effects of the great influenza epidemic of 1918-1919 were still being felt. There was a rise this year of nearly 20 per cent. over the rate for May, 1927. The expected seasonal decline which ordinarily takes place between April and May did not occur this year.

Analysis of statistical data shows the extent to which abnormal weather conditions affected the mortality from some of the principal causes of death. Influenza, for which the deathrate up to the end of March had run below last year's figure, showed a considerable rise in April, with a further increase in May to a figure more than double that for the same month in 1927. The pneumonia deathrate in May was 57 per cent. higher than the corresponding month of last year. The most pronounced rises, as compared with May of last year, were for these diseases, which are always adversely affected by a combination of low temperature and high humidity. The three principal degenerative diseases (heart disease, cerebral hemorrhage and chronic nephritis) always cause more deaths when the mortality from pneumonia is rising; and all three show May deathrates in excess

of those for either April of this year or May of last. Even tuberculosis, which had shown very marked improvement during the four preceding months of 1928, registered a deathrate of 105 per 100,000, as compared with 96.4 in May, 1927.

The surprisingly high mortality in May suggests that more consideration might well be given by public health workers to the effect of such weather elements, as temperature, humidity and rainfall on the deathrate from the principal causes of death. In normal years, it is the months of the first quarter (March, in particular) which record the highest deathrates; but this year, the May rate has exceeded that for each of the earlier months.

The May deathrate for measles (12.1 per 100,000) was unusually high and the cumulative rate for this disease up to June 9th was almost double that for the corresponding period of last year. The diphtheria deathrate showed improvement over the same month of 1927, but the year-to-date figure for this disease stands slightly higher than that for last year, and also exceeds that for the corresponding part of 1926.

The mortality from diabetes registered an increase over that for May a year ago; and, unless there is marked improvement in the latter half of 1928, this disease will record its highest deathrate over a long series of years.

Suicides were considerably more numerous than in May of 1926 and 1927. Fatal accidents also increased

and the automobile accident deathrate was 21.5 per cent. above that for May, 1927.

The general deathrate for the large cities of the United States in May was 14.8 per thousand estimated population. This is about the same as for the previous month, but much above the figure for May, 1927 (12.8). As compared with April, there was greater prevalence in May of poliomyelitis and typhoid fever, with fewer cases of diphtheria, influenza, measles, scarlet fever and smallpox. Comparison with May, 1927, shows more reports of influenza, measles, poliomyelitis and smallpox with fewer cases of diphtheria, scarlet fever and typhoid fever.

Although influenza was slightly less prevalent in May than in April, about three times as many cases were reported from 23 states as for May a year ago. This disease appears to be becoming more prevalent in Massachusetts, Connecticut, New Jersey and West Virginia. Furthermore, accident and health underwriters of the Middle West report that influenza claims are being filed with sufficient regularity to denote that the disease is causing much sickness.

Reports of poliomyelitis cases from 41 states numbered 96 in May, as compared with 82 in April. In New York, the increase was from 3 cases to 14; in South Carolina, from 2 to 7, and in California, from 16 to 23.

Among the prominent health activities of the month the following may be mentioned: The Montreal Health Department has been reorganized with new appointments to the staff and an additional appropriation of \$150,000. The Sixth Annual Ohio State Conference for Social Work Among Negroes was held at Akron. The Johns Hopkins Hospital at Baltimore announced

that a clinic is about to be opened for diagnosis only, especially for persons of moderate means. The maximum charge will be \$25, and, in most cases, the fee will be only \$10. The new clinic has an endowment of \$2,000,000 from the Carnegie Foundation. Plans for a five-year program of research by a committee of physicians, sanitarians, economists and laymen, with a view to ascertaining how a family of moderate means can secure adequate medical attention, were announced. The investigation will be conducted jointly by the American Medical Association, the Metropolitan Life Insurance Company, the United States Public Health Service and other agencies. The Milbank Memorial Fund, The Russell Sage Foundation and the Twentieth Century Fund are giving this undertaking financial support. A state-wide survey to locate all the crippled children in Minnesota is being planned by the Minnesota Association for Crippled Children. Three outbreaks of infantile paralysis, the first in 1916, have affected from 2,500 to 3,000 children in that state, leaving many of them more or less crippled. A Minnesota law provides state aid to the extent of \$250 annually for the education of each crippled child discharged from the hospitals, but unable to attend the regular schools. An Institute on Neo-natal Mortality was held at Newark, New Jersey, under the leadership of Dr. Julius Levy of the State Department of Health. One of its most interesting features was the presentation of diplomas to midwives who had completed a post-graduate course at the Jersey City Hospital. This is believed to be the first post-graduate course for midwives in either the United States or Europe. Oklahoma was admitted to the Birth and Death Registration Areas.

Tooth Structures, Diet, Caries

MAY MELLANBY

(II) The Structure of Human Teeth in Relation to Caries; the Relationship of the Degree of Caries to the Degree of Structural Defects (Hypoplasia).

In the second paper of this series (5) I endeavoured to relate the structure of human teeth and their susceptibility to caries. In the teeth examined as regards structure, referred to above, the extent of caries was also noted, and it was found there was an intimate relationship between structure and caries. Of the 1,036 deciduous teeth, 36 per cent. were well calcified, and of these 73 per cent. were free from carious cavities. On the other hand, of the 64 per cent. which were badly calcified (hypoplastic) only 15 per cent. were free from carious cavities, the majority of the others having large cavities. Again, comparing the different types of teeth with one another, the same holds. The incisors were better calcified than any other type of tooth, and these were also much less susceptible to caries, while the second molars were the worst calcified and the most susceptible to caries. The degree of caries in a tooth is generally proportional to its structural defect, i.e., slight caries in a well-calcified tooth, extensive caries in a badly calcified tooth.

It will be evident from the results summarized above that two main practical problems are presented:—

(a) If human deciduous teeth in this country are as badly calcified as the investigations recorded suggest, what is the cause of this mal-development? and

(b) Why is the relationship between the structure of teeth and the incidence of caries not absolute? Is it partly because fully

erupted teeth, whatever their structure, have some power of altering their resistance to caries, and if so, what is the mechanism which controls this resistance?

I shall deal now with the first of these problems and describe the factors of diet and environment responsible for the production of well and badly calcified teeth as revealed by animal experiments and to some extent confirmed by investigations on children. Afterwards I shall discuss the question of the resistance of teeth to caries independently of their structure.

(III) Some Factors of Diet and Environment Influencing the Calcification of Teeth.

My work on calcification of the teeth, first published in 1918, is an outcome of my husband's investigation on rickets, and our work in collaboration has shown that, at least in dogs, the causes responsible for the bony changes in rickets are also responsible for defects in the structure and arrangement of the teeth. Evidence is accumulating which suggests that the same is the case in children. As stated above, the majority of children's teeth are defectively calcified, and most of these sooner or later become carious. Incipient rickets is probably also far more common than is usually recognized. McGonigle, following up the work of MacIntosh, found that out of over 2,500 school children in County Durham 83 per cent. had definite rickets. Of the group with definite rickets only 9 per cent. had teeth free from caries, whereas 73 per cent. of the children with no rickets had caries-free mouths.

(a) Animal Experiments.

The domestic dog was largely used in the experiments described, because it has a metabolism somewhat similar to that of man. Like man, the domestic dog is omnivorous, and it has the great advantage of being able to live as a member of a family under the same hygienic conditions as man. It can also readily be kept in excellent health in the laboratory as long as desired, at any rate up to eight years. Moreover, although the dog is not susceptible to caries, the structural defects found in its teeth under experimental conditions are on the whole similar to those found so commonly in man.

Any possibility that the factors controlling the structure of the dog's teeth stand in a category by themselves has been excluded by an extension of the experiments to rabbits and rats and, on a small scale, to human beings, the results obtained being in all cases closely comparable to those previously found in dogs.

There is no need here to say much about the experimental methods, except that the animals were all kept as far as possible under the same hygienic conditions, unless otherwise mentioned. In comparing two or more diets, puppies of one litter were used, and in comparative experiments only one factor was varied at a time. The puppies were put on diet at the same time and killed at the same time. A typical basal diet is as follows: Cereal, 80-200 grm.; "lean" meat, 10-30 grm.; separated milk, 150-250 c.c.; fat, 10 grm.; orange juice for vitamins C; yeast for vitamins B₁ and B₂; and sodium chloride, 1-4 grm. The amount of food given to the individuals of a family was usually regulated by the amount eaten daily by the puppy with the smallest appetite. If one puppy left some food, then the amount of food given to the rest of the family was generally cut down.

Apart from any fat-soluble vitamins A and D that may be present in the fat given, it will be seen that the basal diet is deficient in this respect but that otherwise it contains a good supply of energy-bearing foods (proteins, carbo-hydrates and fats), and of salts. A few years ago, whatever variety of fat had been used, it would have been called a very satisfactory diet.

The experiments have shown that some foods contain substances with specific influences on the calcification of teeth and jaws, and that certain environmental conditions may also be involved.

Factors assisting calcification are:

- (1) A vitamin, the antirachitic or calcifying vitamin D, having a distribution and properties similar in many respects to vitamin A, and which until recently has often been referred to as vitamin A.

- (2) Calcium and phosphorus.

- (3) The exposure of the skin or of certain foodstuffs in the diet to a source of ultra-violet radiations such as sunlight or a mercury-vapour lamp.

Factors interfering with calcification are:

A substance or substances associated especially with cereals and cereal products.

Factors Assisting Calcification of Teeth.

- (1) Vitamin D.—The most potent factor for promoting the development of normal teeth and jaws is a vitamin associated in general with fats and now called vitamin D. This substance was first described by E. Mellanby as the antirachitic vitamin (11 and 12); its discovery was first mentioned in the Medical Research Council report for 1916-1917. In distribution and properties vitamin D in many ways resembles vitamin A. Like vitamin A, it is found in cod-liver oil, most fish oils tested, egg yolk, whole milk, suet and but-

ter. The potency of any one of these substances differs under varying conditions. For instance, summer butter is more potent than winter butter. The reason for this became obvious when the relation of ultra-violet radiations to vitamin D was known. The cow itself and the food upon which it lives get more radiations from the sun during the summer than during the winter months. Vegetable oils as usually prepared have, as a rule, poor calcifying and growth promoting properties, while lean meat, cereals of all kinds, egg white, orange and lemon juice, yeast and most vegetables have little or none. Heating such fats as butter and cod-liver oil to 120° C. in the presence of oxygen ultimately destroys their power to promote calcification as well as growth.

It is to be noted that in all comparative experiments the amount and variety of proteins, carbohydrates and salts (including, of course, calcium and phosphorus, were the same, the only difference in the diets in most cases being the type of fat eaten, and yet the teeth were perfectly formed, or normal, in some cases and very defective, or hypoplastic, in others. The interpretation of these results is probably that some fats are rich in the vitamin now called vitamin D, which enables the ameloblasts and odontoblasts to make use of the circulating calcium and phosphorus and other salts and so to incorporate them in the developing enamel and dentine. The amount of vitamin necessary for the production of perfect teeth and jaws is not an absolute quantity, but depends upon the amount and type of other elements in the diet, on the rate of growth relative to the food eaten, and on other factors, some of which will be mentioned later.

(2) The Presence of Calcium and Phosphorus.—It is obvious that since teeth are largely made up of calcium and phosphorus the calcifica-

tion of teeth must depend on the presence in the diet of a sufficiency of these substances. The question is, what is a sufficiency? It is impossible to choose any ordinary diet which does not contain some calcium and phosphorus, but whereas phosphorus is fairly abundant in most diets it is easily possible to cut down the calcium intake to a very low limit. Thus, the elimination from the diet of milk, egg yolk, cheese, cream and green vegetables will almost certainly result in a diet containing little calcium. That is to say, a diet made up of commonly eaten foods, such as bread, rice, oatmeal, meat, jam, fruit and fat will contain little of this substance.

It is probably correct to sum up the significance of calcium and phosphorus on the diet so far as the teeth are concerned as follows: The minimum of calcium and phosphorus, especially the former, necessary for the formation of perfectly calcified teeth varies with the amount of vitamin D consumed. With a high vitamin D intake there seems to be no danger in the case of ordinary diets that either calcium or phosphorus will be less than that required for perfect tooth calcification. Under ordinary conditions of diet without extra vitamin D it is easy for the diet to contain too little calcium for perfect tooth calcification. Further, no matter how high the calcium and phosphorus intake may be, unless there is also a sufficiency of vitamin D in the diet, the teeth will be defectively calcified (14).

(3) The Effect of Exposure of the Skin or of Certain Foodstuffs in the Diet to Ultra-violet Radiations.—As a direct outcome of the discovery of the antirachitic vitamin by E. Mellanby, intensive work on the effect of diet on bone calcification in rats has been carried out during the past seven years, and, although the new knowledge gained has not influenced the central facts, it has extended and

clarified the situation and emphasized the importance of the original discovery. In 1919 Huldschinsky showed that when rachitic children are exposed to the radiations of a mercury-vapour lamp the bones harden up.

From this time onwards many investigators have attempted to correlate the two apparently unrelated facts, viz., the calcifying effect of (1) The antirachitic vitamin D in the food, and (2) the effect of ultra-violet radiations. A close connection became evident in 1924 owing to the work of Steenbock and Black who showed that some foodstuffs after irradiation by a mercury-vapour lamp become antirachitic (14). The latest development of this series of investigations is the observation of Rosenheim and Webster (15) and Windaus and Hess (16), who found that ergosterol, a substance widely distributed in nature and present both in the skin of man and other animals and in many foodstuffs, became activated to vitamin D when exposed to ultra-violet radiations. Thus it is now generally accepted that exposure of the skin and foods to the sun or to other source of ultra-violet radiations controls bone calcification by the synthesis of the antirachitic vitamin D from ergosterol. The beneficial result on tooth calcification of irradiating the animal (17) or the food has been demonstrated. In fig. 8a is shown the improvement in the teeth brought about by adding to the diet irradiated ergosterol in the form of Radiostol, kindly provided by Messrs. British Drug Houses. Ergosterol is a constituent of many foods and foodstuffs, which when irradiated develop a calcifying action and so tend to produce well-formed teeth. Thus, if olive oil—a substance deficient in vitamin D—be irradiated it assumes potent calcifying properties when taken by mouth. Butter which has some calcifying ac-

tion before being irradiated is much more active in this respect after irradiation. Cereals which, as will be seen in the next section, actively interfere with calcification before irradiation may actually assist the calcification of teeth after such treatment.

It is evident, therefore, that in a country where there is plenty of sunlight and where the body is exposed to it perfect teeth may be produced under those dietic conditions which in a sunless land such as ours would result in imperfect calcification.

Factors Interfering With Calcification of Teeth.

Of all the foods tested, one group definitely interferes with calcification of teeth: that is to say, the foods of this group act in a specific sense contrary to vitamin D (13). If there is plenty of vitamin D present in the diet this group of anticalcifying foods is completely antagonized. On the other hand, the greater amount of anticalcifying foods eaten the more necessary is it to increase the vitamin D of that diet.

Now the chief foods which have this anticalcifying influence on teeth and jaw formation are the cereals and some cereal products. They differ amongst themselves as to their intensity of action. The most potent so far discovered is oatmeal and the least white flour. Between these extremes are found other cereals, somewhat in the following order: oatmeal (worst), maize, barley, rye, wholemeal flour, rice and white flour. The germ of a grain, i.e., wheat, maize or rye germ, has a more powerful action in interfering with calcium deposition than the endosperm.

These results are unexpected, for they not only suggest the presence in cereals of a class of substances having harmful effect on calcification, which have been described by E.

Mellanby as "toxamins" (18, 19), and which can be antagonized in their action by "vitamins," but, in one respect at least, they seem contrary to common sense. Thus oatmeal and wheat germ which have been found to be special offenders as regards tooth calcification are richest in those elements, viz., calcium and phosphorus, which go to the formation of teeth. A result of this nature again illustrates how futile it is at the present time to assess the calcifying qualities of a diet by its content of calcium and phosphorus. The amount of these substances required depends upon several conditions, including the amount of vitamin D and the amount and type of cereal.

The anticalcifying effect of oatmeal is not destroyed by cooking or by heating at 120° C. for several hours. It can be destroyed by boiling the cereal with dilute acid, such as 1 per cent. hydrochloric acid, for two hours. Besides being completely antagonized by vitamin D in the diet or by exposure to a source of ultra-violet radiations it can be reduced by adding an extra amount of calcium, especially in the form of calcium carbonate, to the food eaten. Without some vitamin D, however, increasing the calcium will not in itself allow the production of perfect teeth but will only diminish the interfering influence of the cereal factor on teeth calcification.

It may be added that little or nothing is known as to the chemistry of the anticalcifying influence. It does not appear to be directly related to the fat of the oatmeal, for this can be removed and still leave the effect. On the other hand, the saponifiable part of oatmeal has some anticalcifying action. Again, most of the carbohydrate can be digested away by diastase and the anticalcifying effect is still prominent in the residue.

Since cereals form the basis of the diet in this country, because of cheapness and easy storage and transport, and since, as shown above, the substances usually eaten which contain vitamin D belong to the more expensive category, e.g., milk, eggs, butter, &c., it can be easily realized that for economic reasons alone this action of cereals is not only of academic interest, but is probably responsible for much dental hypoplasia. If, however, there is sufficient calcifying vitamin present in the diet the effect of cereals (oatmeal in particular) is entirely obliterated. In other words, if plenty of whole milk is taken with porridge, then the anticalcifying substance in the oatmeal is made ineffective and good calcification results.

Experiments on rabbits (10) and rats indicate that the factors responsible for calcification of their teeth are the same as those responsible for the calcification of dogs' teeth. Tissues calcified during the period when diets deficient in vitamin D are eaten are imperfectly calcified and the dentine contains interglobular spaces.

I have briefly described and illustrated the results obtained in animals, which can be condensed to the statement that there are in food two factors acting in a specific way on tooth formation: (1) a substance (vitamin D) which is essential for the calcification of teeth and can be synthesised by the action of ultra-violet rays on the pro-vitamin found in many animals and plant tissues; and (2) a factor in cereals whose identity and chemistry are but little known, which interferes with the same calcification. So far as the investigations go no other factors are so specifically concerned. There is, for instance, no evidence that vitamin C, whose relation to the teeth formation in guinea-pigs has been shown by Zilva and Wells (20), Höjer (21), Toverud (22), and

others, has anything like the specific effect on the calcification of teeth as vitamin D. Nor is vitamin B specifically implicated in this physiological process. Thus there is no scientific basis for the habit sometimes adopted of writing about "vitamins," as regards teeth calcification, as if they could be classed together as a group having a common action. All the evidence shows that each has its specific task, and that vitamin D is the calcifying vitamin. Again, although the calcium and the phosphorus of the diet are essential for tooth formation, their importance is secondary, because the extent to which they can be utilized depends on the presence of vitamin D and the cereal factor.

It is necessary to emphasize the specific effect of these two dietetic entities; although future work may show them to be influenced to some extent by conditions not at present known, they will I think remain the fundamental factors determining the relationship of diet to the proper calcification of teeth.

(b) Extension of Animal Results to Children.

During the course of the work on animals, attempts have been made to secure the feeding from birth of a number of children on diets similar in essentials to those which, in the experiments, resulted in perfect calcification. As previously mentioned it is very difficult to guarantee that such diets are actually taken by the children unless they are in an institution under special supervision. Up to the present time this condition has not been practicable, but it is hoped that in the near future results on a large scale may be obtained. The children referred to above belong to private families and the main addition to the ordinary diet was a daily dose of cod-liver oil. The teeth of these children in all cases examined microscopically are much superior in structure to the teeth of

the average child, whose diet contains comparatively little vitamin D, especially in relation to the amount of cereals. Ground sections of the incisors of two of the children show the enamel and dentine to be normal in structure.

(c) The Effect of the Diet of the Mother on the Teeth of the Offspring.

Although at an early stage in the investigation it became clear that the diet of the mother during pregnancy and lactation had an influence on the development of the teeth of the offspring, yet no experiments have been previously published in any detail. Some of the results were discussed in 1920 and 1921, at meetings of the Manchester Dental Conference (23) and the School Dentists' Society. On these and other occasions I showed lantern slides and photomicrographs demonstrating the effect on the teeth of puppies of feeding pregnant bitches on diets deficient in the vitamin which at that time I described as vitamin X, but which is now usually called vitamin D. I discussed the problem of the supply of substances from the maternal organisms to the developing foetus, and the sacrifice that must be made on the part of the mother if it should happen that her own diet is devoid of such substances, and I suggested that the greater liability of pregnant women to caries was probably due to their sacrifice of the calcifying vitamin to their offspring. When pregnant and nursing bitches were fed on diets deficient in the calcifying vitamin the dentine of the deciduous teeth of the offspring often contained small interglobular spaces (fig. 10), and the enamel might be defectively calcified, indicating that the mothers had been unable to supply from their own bodies sufficient of those factors necessary for perfect calcification.

In comparing the effect of antenatal and neonatal feeding on the

structure of deciduous teeth of pups and those of children, it must be remembered that the crowns of the deciduous teeth of pups are well advanced even at birth, and that they erupt during the first five or six weeks of life, so that when weaned, the majority of the deciduous teeth are erupted. In the case of children comparatively little calcification has taken place at birth, in fact, as far as the second molars are concerned, only a little of the cusps is calcified, often with no calcified tissue joining them; at the time of weaning, calcification has advanced considerably, but is not nearly as far advanced as in pups. It is to be expected, therefore, that any immediate effect of deficiencies in the maternal diet will be less noticeable in the case of the pups.

Since the mother tends to sacrifice her own needs to those of the offspring, it is not to be expected that gross defects will be found in the calcification taking place during antenatal life; more defects might be expected during lactation when the mother tends to have exhausted her stores; but most after weaning when the diet is likely to be unbalanced.

Nevertheless, definite defects are seen in the deciduous teeth of puppies when the mother is fed on a diet deficient in calcifying power (compare the dentine of A. and B. in fig. 9). The following examples will make this point clear:—

Maternal diet during pregnancy and lactation	
A. (Abundant Vitamin D.) Bread, sep. milk powder, lean meat, orange juice, yeast, salt and cod-liver oil	
B. (Very little Vitamin D.) Oatmeal, sep. milk powder, lean meat, orange juice, yeast, salt and olive oil	
C. (Some Vitamin D.) Bread (large amount), meat, scraps, bones, orange juice, yeast	

amination by Weil's process, the majority (about 80 per cent.) of animals whose mothers' diet contained, among other things, abundant calcifying vitamins, especially those born at the Field Laboratory, had excellent enamel and dentine. In the case of animals whose mothers had been given diets deficient in fat soluble vitamins, the enamel and dentine of the deciduous teeth were usually defective in structure.

In addition to these effects on the teeth it was found that the general health, both of the mothers and their offspring, was greatly affected. In some cases the animals aborted; in one case the mother died during pregnancy; in all cases the young puppies were more difficult to rear, unless a good supply of fat-soluble vitamins was also included in the diet at some period. On the basis of these results, E. Mellanby (24) has suggested that some of the morbid changes that develop in young children shortly after birth, including marasmus and catarrhal conditions, are probably due to abnormality of the maternal diet, and especially in the direction of absence of fat-soluble vitamins and excess of cereals.

(IV) Evidence of Varied Resistance of Erupted Teeth to Caries and Other Harmful Stimuli.

(1)—In Experimental Animals.—It was found that in puppies and dogs, if a stimulus causing gradual

Number of puppies in litter	Structure of teeth
6	All normal
6	3 hypoplastic; 3 slightly hypoplastic
8	5 normal; 3 slightly hypoplastic

These differences were seen in a large number of cases. Thus, out of 250 sections of deciduous teeth of puppies prepared for microscopic ex-

removal of enamel, or enamel and dentine, was applied to the teeth they reacted by alterations in the primary dentine, and by producing

in the corresponding region of the pulp secondary dentine; this varied in amount and quality according to the feeding and environment of the animal during the process of "attrition." Thus the teeth of an animal on a diet of highly calcifying character, containing an adequate quantity of the calcifying vitamin D, usually responded by alterations in a localized area of primary dentine and by producing abundant well-formed secondary dentine in a corresponding area of the pulp, which often resembled normal primary dentine, the tubules of one being continuous with those of the other (fig. 11) (5). Indeed, it was occasionally difficult to say where the secondary began and the primary ended. On the other hand, if the diet contained little vitamin D, particularly in relation to the amount of cereal, changes in the primary dentine were less marked, and either no secondary dentine, or secondary dentine of a defective quality containing interglobular spaces, was formed. Compare A and B in fig. 10, in which the secondary dentine was produced experimentally by filing the teeth. A received a diet abundant in, and B a diet deficient in, vitamin D. It seemed, in fact, as if the teeth altered their resistance and reacted to a harmful stimulus according to their state of nutrition at the time of the stimulus, whatever their original structure.

(2) In Man.—There is also evidence that human teeth vary in their powers of reaction to harmful stimuli.

(a) Histological Evidence. — During the microscopic examination of the sections of children's teeth (4), not only was it found that the large majority were imperfectly calcified, but also that the secondary dentine produced in response to attrition or caries varied greatly in amount and character. In paper II of this series (5) it was suggested that 925 out of

1,036 deciduous teeth examined might be regarded as in agreement with the hypothesis that there is a direct relationship between structure and caries, while 111 of the teeth were definite exceptions (5). Now, it was stated above that the experimental work on dogs showed that the resistance of teeth, as indicated by the quantity and quality of the secondary dentine laid down in response to irritation, could be altered by certain factors, especially the amount of vitamin D in the diet. It seemed that these facts might give a clue to the exceptions in human teeth just noted.

With the object of testing this hypothesis the secondary dentine was carefully examined in all the 1,036 human deciduous teeth, and it was found that out of the 59 teeth in which there was poor primary calcification and yet freedom from carious cavities, 33 had well calcified secondary dentine. Of the 52 teeth with carious cavities and good structure 47 had no secondary dentine or badly calcified secondary dentine. So that the structure of the secondary dentine of 72 per cent. of the exceptions to the main hypothesis suggested that their resistance to caries had been raised or lowered, respectively, after eruption. It is interesting to note that in the cases of arrested caries there was abundant and generally well-calcified secondary dentine.

(b) and (c) Direct Investigations on Children.—The possibility of altering the resistance of erupted teeth to caries is suggested also by the work of Dr. Lee Pattison and myself, in which we showed that even when a tooth is imperfectly calcified the onset of caries can be controlled to some extent by specific variations in the diet (25 and 26). All evidence so far obtained, in fact, emphasizes the importance of controlling resistance to infection by diet and reduces

the relative importance of the immediate bacterial cause of caries. Table 1 shows the summarized results of two investigations carried out on children by Dr. Lee Pattison and myself.

TABLE I.

Main dietetic differences	Average number of teeth per child in which caries increased in 8 months	
	1st investigation	2nd investigation
A. Abundant fat-soluble vitamins and calcium; no oatmeal	1.4	1.8
B. Less fat-soluble vitamins and calcium; oatmeal	5.1	5.8
C. Intermediate between A and B	2.9	3.0

Note.—Dr. Pattison found that the calcium content of the saliva in the children of group A was high, while it was low in group B and intermediate in group C (27).

More recently, in order to test the effect on the teeth of a single factor, a batch of children has been fed on the ordinary hospital diet, but with the addition of a daily dose of vitamin D in the form of from 1 to 8 c.c. of Radiostol (irradiated ergosterol), kindly supplied by Messrs. British Drug Houses. The spread of caries was greatly reduced, as with diet A mentioned above, but still more striking was the amount of arrest of caries. Details of this work will be published shortly.

The evidence gained by the examination of secondary dentine in a large number of teeth and the results of investigations on children, taken in conjunction with the artificial production of secondary dentine in animals, demonstrates that diets containing abundant fat-soluble vitamins, such as cod-liver oil, egg yolk, milk, &c., are more likely to bring about resistance to the onset and spread of caries than diets containing little of such vitamins and much oatmeal.

(V) Discussion

The investigations described above indicate that:—

(1) The high incidence of dental caries in children in this country is

associated in a general way with defective structure.

(2) It is possible to produce in puppies and other animals perfect and imperfect teeth by slight but specific alterations in the diet, and,

Average number of teeth per child in which caries increased in 8 months

1st investigation 2nd investigation

1.4 1.8

5.1 5.8

2.9 3.0

so far as the present limited experience goes, the same facts apply to children.

(3) The resistance of teeth to caries and attrition can be influenced by diet independently of their original structure.

These results suggest that the problem of dental caries is fundamentally a problem of nutrition, and they also supply an indication as to how the scourge can be met with a probability of success.

Since there are two quite different means in the dental literature attached to the term "dietetic hypothesis," it may be well here to state that in the investigations now reported the term is used in reference to the food in relation to metabolic processes in which the diet influences the teeth specifically, not so much by a direct action in the mouth as by influences brought to bear on the developing or developed teeth after the food has been digested and absorbed, and its products carried in the bloodstream to the dental and other tissues. Many writers appear to use the term simply in reference to the influence of food actually in the mouth on the development of caries, the presence of fermentable sugars, the softness of the food, &c.

The first practical problem is to procure the formation of perfectly calcified teeth in the growing child. Knowledge of the food factors controlling the calcification of teeth should render this possible. The two main factors influencing dental structure and, to some extent, arrangement of teeth in the jaws, have been shown to be (a) vitamin D which aids calcification of teeth and the calcification and growth of jaws, and (b) cereals which interfere with these functions. The effect of ultra-violet radiations, also conducive to good dentition, is now known to be done to the production, by the rays, of vitamin D in the tissues. A minimum amount of calcium and phosphorus is, of course, essential, but this minimum varies with the amount of vitamin D in the diet, and cannot be stated as an absolute quantity.

The degree and character of dental calcification are, then, the result of a battle between these factors, and the defective calcification so commonly present in human teeth in this country, can be assigned largely to a relatively deficient intake of vitamin D in the food, with lack of sunshine on the body, and a relatively high proportion of cereal. Caries is associated with defective structure, and since it has been shown that diet affects the resistance of teeth, apart from the original structure, the full effect of diet as regards resistance to caries can only be obtained: (1) By giving children diets which have been shown to produce perfectly-formed teeth during the actual calcification processes, and (2) by continuing the diet along similar lines after the teeth are calcified.

The calcification of the deciduous teeth starts while the infant is in utero, and therefore the special dieting should be applied to the mother during pregnancy and lactation, partly to ensure an adequate supply

of those substances essential for the child, and partly to prevent the mother herself from going short of these essential factors in releasing her own supplies to the developing embryo.

The question may be asked: Are these deductions from experimental work in line with common experience? In other words, are the teeth of peoples whose diet contains abundant fat-soluble vitamins less liable to caries than those whose diets are deficient in these vitamins and excessive in cereals? On the whole, I think it can be stated that this is the case. Two groups of people, the Esquimos and the inhabitants of tropical countries, are said to have teeth less susceptible to caries than our own. The diet of Esquimos is deficient in cereals, and is largely made up of fish and animal food containing much fat and its associated vitamins. While the diet of natives in tropical countries is often unbalanced, in that it contains much cereal and less fat-soluble vitamins, the infants are breast-fed often for long periods, and the sunshine striking their naked skin supplies the bodies vitamin D, which tends to antagonise the cereal effect and to make up for the deficiency of vitamin D in the food. It must be remembered that the distribution of ergosterol is widespread in nature, and if there is abundant sunshine, with exposure of the skin, and perhaps of food material, there is no reason to fear a deficiency of the provitamin. Thus in both cases the amount of vitamin D in the body may be comparatively high and no doubt results in better formed teeth. It has been stated that when these native people leave their natural habitat and come to live under the dietetic and other conditions of civilized man, their teeth are susceptible to caries as those of ourselves.

As regards the distribution of caries in this country, two points

which, although not statistically established are generally accepted as true, may be mentioned. The first is that on the whole the teeth of the wealthier classes are less affected than those of the poor. My observations (6) are in accord with this suggestion. This might be expected from the experimental results, since the natural foods producing good teeth and least tendency to caries include milk, butter and eggs, whereas the cheaper foods, upon which the poorer people depend, include more cereals, which have been shown to mitigate against calcification.

A second point worthy of mention is the greater freedom from caries in the teeth of children brought up in institutions than in the same class of children living in their own homes. This state of affairs has been noticed by many observers, among whom may be mentioned Ainsworth (10) who quite recently recorded this fact. It seems to me that this difference in caries distribution would also be expected on the nutri-

tional or dietetic hypothesis suggested by the animal experimental results. Most institutional feeding of children includes in its regime, among other vitamin D-containing foods, a regular supply of milk, so often lacking in the average poor household. On the whole, I think it may be claimed that the results obtained by the experimental work and supported by clinical investigations are in accord with experience as regards the distribution of dental caries in human beings.

In conclusion I desire to acknowledge quite freely that the problem of the prevention of dental disease is not wholly covered by the means I have outlined above. It is probable, although proof is lacking, that the risk of invasion and attack can be lessened by measures for improving the immediate environment of the teeth, but I feel sure that such measures are of secondary importance as compared with those for strengthening the intrinsic powers of resistance.

Health Service in Alberta

Leslie McIntyre, D.D.S.

Alberta, extending from the U. S. border to the N. W. T. covers an enormous area, roughly seven hundred miles by 400 miles. The pursuits of the occupants are well diversified. The population, about 60,000, are few in numbers compared to the area, and are scattered over the face of the earth, in a few cities, some towns, but largely in pioneering communities of stout hearted folk, working in a brand new country, under adverse, and in many cases, distressing circumstances. In such districts there is much human misery and ill-health from the lack of ordinary dental and medical help. Suffering children, expectant mothers and adults, crippled from infection are in need. Time consumed, home cares, distance and cost, prohibit journeys for relief.

Some four years ago Hon. Geo. Hoadley, Minister of Health for the Provinces, determined that this condition had to be met, so, as a preliminary step District Nurses were sent out to make a survey and report. A request soon came that some form of service be sent to those settlements in need, and the Travelling Clinic was established. It was not in operation long before demands were received that it embrace the entire Province and in 1927 it was kept going from May 16th to Oct 27th, five and one half months.

The system established was as follows. A circular letter outlining the policy of the Health Department was sent to each School Board in Alberta, a copy with a covering letter was also sent to each municipal district, Women's Institute and U. F. W. A., School Boards were asked to organ-

ize into groups of not less than five school districts to form a unit and to appoint a committee to represent this group. A trained Public Health Nurse was sent to each school in advance of the clinic, to make a health inspection of each child. Where defects were found, a card was sent home to the parents.

The committee and the nurse together selected a suitable building in which to hold the clinic, this was either the best school-house or community hall. The people were responsible for local organization, building and janitor service while the clinic was in operation. The local doctors were advised as to when the clinic would be held and an invitation to co-operate was extended.

In 1927, about 690 school boards requested this service and when organized as per plan, formed 122 centres. As only one clinic was operating, only 43 points were visited. The time spent at each place was not less than two days and not more than five. Two days was the usual time spent with the third for moving and Saturday kept for rest and recreation for the staff.

Transportation was by automobile. As much mobile equipment was carried as could be conveniently transported; collapsible operating table; sterilizer; suction apparatus, laboratory equipment; dental chair and essential dental equipment, etc.

The personnel of the clinic consists of a surgeon in charge, a medical assistant, who assists in the diagnostic work and gives anaesthetics, a dentist and two nurses.

The charges made for the work done have practically covered the cost of operating the clinic. A charge of \$15.00 is made for tonsil or adenoid operations. The charge for extracting teeth is \$1.00 while fillings are done for 50c. A charge of \$2.00 is made for physical examination of adults.

The itinerary for 1928 more than doubles the service rendered in 1927 and at present two diagnostic clinics with surgical team operating between them are in the field.

As well as this system of Travelling Clinics the Health Department has a full time dentist employed to give free service to inmates of all provincial institutions. The Minister of Health has continually co-operated with the members of our profession in dental advancement and very recently placed three members of the profession on his advisory board in his department.

Dr. A. E. Webster, M.D.S., M.D.,
Editor Dominion Dental Journal,
Consolidated Press, Ltd.
Toronto, Ont.

Dear Dr. Webster:—

I am a subscriber to the Dominion Dental Journal and am desirous of information which prompts me to ask you two questions:—

1. Which method is most in accordance with modern dental thought and practice—pulp devitalization by arsenical treatments or pulp removal under local anaesthesia? Which do you consider to be the better method?

2. In case it is desired to leave part of the live nerve in the tooth—what substances are most suitable for filling the rest of the root and pulp chamber for preserving the nerve stump?

Am enclosing stamped addressed envelope for reply which will be greatly appreciated.

Thanking you sincerely

I am yours very truly,

Question No. 1.

Pulp removal by local anaesthesia is to be preferred to devitalization by arsenic provided the pulp is anaesthetized by infiltration or block, but if pressure is used the pulp must not be infected. This latter method is preferred in single rooted teeth, while arsenic is preferred to pressure in multi-rooted teeth.

Question No. 2.

If vital uninfected pulp is to be left in a root canal use a non irritating antiseptic, astringent such as paste made of cloves or creasote for antiseptic oxide of zinc for body, alum or tannic acid as astringent.

Diet and Structure of Teeth

The paper by Mrs. Mellanby, published in this issue, will be received with much interest by those who have followed her investigations into the structural defects of the teeth as a predisposing cause of caries. The further experiments recorded will be attentively considered even by those who believe that variations in the development of the dental tissues have little or no bearing upon the incidence of the disease, and that the only practicable remedy is to be sought in approved external cleansing measures. Mrs. Mellanby has been able to show that diet has a definite influence upon the building up of what may be termed normal or abnormal teeth, and she claims that the under-calcified tissue is the more likely to be affected by caries-producing agencies. Although no reliable returns of the experimental feeding of children are yet available, the results of the tests upon animals, including the use of radiostol, certainly go to prove the essential part played by a sufficiency or deficiency of vitamin D in the food supplied. The statement that, without it, phosphorus and calcium are of little value for bone and tooth building, and that the germ of wheat, contained in whole meal, actually has an inhibiting effect upon calcification that can only be counteracted by a similar supply, may be a new presentation of a fact that is at first somewhat startling, but is, of course, in accordance with modern views as to vitamins and growth. The results of the experiments now reported by Mrs. Mellanby demonstrate that structurally good or bad teeth are to be produced by the supply or withholding of these essential food constituents, but there are obvious reasons why she has not been able, so far, to prove in the same way that the defective tissues are more likely to

decay than the more perfect ones. Her previous researches in this direction certainly point to the conclusion that caries is more frequent amongst markedly hypoplastic teeth than those better calcified, and this, together with the latest investigations, affords strong presumptive evidence that, other things being equal, the liability to decay is in inverse ratio to the approach to perfection of structure. Mrs. Mellanby is of opinion that the internal resistance to caries can be varied after the teeth have been erupted, and, as a result of further examination of the 111 temporary teeth which were given in her previous paper as apparent exceptions to the theory of relationships between structure and caries, considers that in 72 per cent. of these the unexpected immunity on the one hand, or disease on the other, is to be explained by a raised or lowered resistance. — *British Dental Journal*.

(Editor). In a discussion of the relation of dental defects and dental caries, consideration should be given to what Dr. Hyatt has found. Those surfaces which have the most physical defects have the most points of caries, e.g. occlusal surfaces of upper molars have more decays than all other surfaces of that tooth put together. This is at least one indication that defective teeth decay more frequently than sound ones.

OFFICERS OF NOVA SCOTIA DENTAL ASSOCIATION

President, J. P. Walker.

1st Vice-President—E. F. Allen.

2nd Vice-President—C. McArthur.

Secretary—J. Stanley Bagnall.

Additional member of the executive
—H. H. Rice.

Nova Scotia Dental Association

One of the features of the gathering was the addresses by Dr. L. D. Leslie, of Philadelphia, one of the leading practitioners in the United States. In addition to speaking Dr. Leslie conducted clinics.

During the day, which closed with a concert at the Waegwoltic in the evening, reports on the various activities of the association were submitted. Dr. George Kerr Thomson, dean of the dental faculty at Dalhousie university, told of the Dominion Dental Council and also of the work at the local institution, Dr. F. W. Johnson reported for the Oral Hygiene committee and spoke appreciatively of the establishment of a dental clinic at the Dalhousie Health Centre and at the Nova Scotia Hospital in Dartmouth. Dr. A. W. Faulkner told of the re-organiza-

tion of the Canadian Dental Association.

The first business meeting of the Association opened at 10 o'clock, the following delegates being registered: Dr. E. S. Allen, Yarmouth; Dr. J. S. Bagnall, Halifax; Dr. G. A. Chudleigh, Halifax; Dr. H. S. Crosby, Halifax; Dr. G. M. Dewis, Halifax; Dr. A. W. Faulkner, Halifax; Dr. W. L. Fluck, Halifax; Dr. W. H. S. Gray, Halifax; Dr. M. P. Harrington, Bridgewater; Dr. G. R. Hennigar, Halifax; Dr. F. W. Johnson, Halifax; Dr. T. Melanson, Yarmouth; Dr. W. C. Oxner, Halifax; Dr. J. P. Parker, Sydney; Dr. J. H. H. Rice, Halifax; Dr. S. G. Ritchie, Halifax; Dr. G. V. Turnbull, Digby; Dr. K. F. Woodbury, Halifax; Dr. W. W. Woodbury, Halifax.

New Brunswick Dental Society

The annual meeting was held in St. John, N.B., at the Admiral Beatty Hotel, July 11, 1928. Officers elected were:

President—J. Kerr Higgins.

Vice-President—Yvon E. Gaudet.

Secretary—F. A. Godsoe.

The new council is composed of Dr. W. P. Broderick, president of the Council of Dental Surgeons, and Dr. F. A. Godsoe, registrar.

There were no papers delivered at this year's session, the meeting being devoted entirely to business, with the exception of a demonstration of the Cameron diagnostic lamp by Dr. J. N. Mason, of Chicago, and an informal talk by Dr. Harry S. Thomson Dental Hygiene, in the interests of the

Hygiene Council of Canada. He told of the work being carried on in the Dominion and stressed the benefit of the project.

It was reported that only one registration had been received from the Examining Board this year. This was from Dr. T. G. Manning, son of Dr. James Manning, Germain street.

Plans were discussed for next year's annual meeting, which it was decided would be held in Fredericton, following an invitation from the Fredericton delegates. A committee was named to prepare programs for the 1929 convention, which it is planned to make an important session with a number of papers delivered by prominent members of the profession and the holding of special clinics.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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ONTARIO—S. Stewart Crouch, D.D.S., Toronto; W. C. McCartney, D.D.S., L.D.S., Ottawa.

Vol. XL

TORONTO, SEPTEMBER, 1928

No. 9

In this issue we publish an abstract of the June report of the health of the people insured in the Metropolitan Life Insurance Company of the United States and Canada. This is especially interesting to those who attended the meeting of the Canadian and Ontario Dental Associations and heard Dr. Hyatt's discussion of the frequency of decay of the different tooth surfaces. It is interesting to note how frequently the first molars decay as compared with all other teeth and especially the upper first molars. This is as one would suspect because of the greater number of defective points of enamel in these teeth. It points out to the profession and public health workers generally where special vigilance should be directed. The profession has had a notion that proximal surfaces decay more frequently than occlusal surfaces but these statistics indicate that there are more cavities in occlusal surfaces than all other surfaces put together. It must not be concluded from these reports that decay does not occur on proximal surfaces and that dentists need not expect to operate on proximal surfaces. The dentist's opinion has been gained from the fact that recurrence of decay on proximal surfaces are more frequent than on any other surface. He has found that recurrences are relatively infrequent in well treated defects of occlusal surfaces. Some one should make a report on the relative frequency of recurrence of dental caries on the various tooth surfaces such as Dr. Hyatt made on the beginning of caries. It might well turn out that the dentist spends more time treating proximal surfaces than all other surfaces put together.

We also publish the relative causes of death from some of the more acute and chronic diseases and accidents. Dentists are becoming more and more interested in the acute infectious diseases of youth and especially in the chronic diseases of middle life. The dentist must know enough about such diseases so as to be able to say this or that oral condition may be the cause of the patient's sickness. Since practically all dentists drive motor cars and since death and disfigurement from this cause are rapidly on the increase especially in Canada we print the report on accidents of this nature. The training our dentists got in the army will not come amiss in these days of Fords at seventy-five miles an hour and flying the sport of the reckless.

Editorial Notes

Dentistry is now a regular part of the Toronto Exhibition.

The next meeting of the American Dental Association will be held in Washington, with Percy Howe as president, Dr. Bogle, of Nashville, as president elect.

It is said that the dental laboratories of Chicago are making 600,000 dentures annually. This looks rather large when one thinks of the number made in private offices as well. Are dental teachers aware of the meaning of the fact so many dentures are made in what are known as public laboratories.

The Dominion Medical Council recently met in Ottawa and took into consideration the advisability of having only one examination for admission to the degree in medicine and license to practise in any province in Canada. This looks like common sense and has much to commend it in economy of effort, time and money.

A discussion of the frequency of the occurrence of a perfect set of teeth has been going the rounds of the daily and weekly press of Canada based on a statement of Dr. Hyatt. In the first

place there would have to be a definition of a perfect set of teeth. This has not been done. No two men could agree on the definition no more than the judges at a baby show. Such discussions are fruitless.

Dr. Daly has tried out a moving picture in front of the dental chair for patients to watch through long, tedious or discomforting dental operations.

At the meeting in Edmonton recently, election of officers took place with Dr. McAuley, of Calgary, elected president, Dr. McNichol of Medicine Hat, vice-president, and Dr. Mason, Edmonton, secretary.

Dr. Patterson has gone to Red Lake by air craft to examine and treat the teeth of the residents of that mining camp.

The Toronto "Mail & Empire" says: Dental science is making such strides that the day may come when teeth will not be extracted unless there is something wrong with them.

In the words of the social climber "they said a mouthful". Dentists should think over such remarks made by the lay press.

A Dentifrice That Progresses With the Times

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IN the engineering world each year brings new principles and new inventions. Consider the difference in your motor car today and what it was five years ago.

So it is with dental science. Each year marks the advancement of modern theories. What was good practice yesterday may be in the discard of today.

That is the reason the makers of Pepsodent believe a *scientific* dentifrice can never be a constant formula. We wish it could. Work would be less and profits greater. But as long as the study of medicine and dentistry progresses Pepsodent will go forward with it.

Pepsodent is compounded under high scientific supervision primarily to remove mucin plaque—the film held chiefly responsible for decay and pyorrhea.

The regular use of Pepsodent firms the gums and gives them better tonal quality.

The fact that over 160,000,000 tubes have been consumed during the last eleven years, and that we have received less than fifty individual complaints, is most eloquent attest that Pepsodent acts in gentle safety to the teeth and gums.

Our aim is to make Pepsodent a tooth paste both agreeable in taste to the user and so scientifically correct that dentists will urge its use among their patients exclusively for gums that lack tonal quality and because of its unique prophylactic properties.

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The meeting of the Alberta Dental Association will be held in Lethbridge.

The members of the Hamilton Academy of Dentistry held their annual picnic recently at Oaklands park. A ball game between the married and single men and golf were the features of the outing in the afternoon. The married men won the ball game by a score of 13 to 6. The batteries were: Married men, Drs. McEwen and Vivian; single men, Drs. Clark and Jackson. Dr. W. G. Thompson was umpire at the plate, and Dr. Maxwell Morrow on bases.

In the evening a dinner was held, at which Dr. Mason, on behalf of himself and two other Toronto dentists, Dr. Switzer and Dr. Hoskin, who attended the picnic, presented a gavel to the Hamilton Academy of Dentistry. The gavel was received by Dr. H. L. Field, president of the Hamilton academy. It is a beautiful piece of work in walnut, mounted with sterling silver, on which is engraved the name and crest of the Hamilton academy and the names of the Toronto donors.

Tooth decay is the mother of toothache and toothache is the mother of rheumatism.

Dr. C. S. Wilson, Perth, Ontario, will serve such people in the remote parts of Lanark county who need dentistry.

DENTIST WINS \$6,200 FIGHT

Holding that the verdict was contrary to the weight of evidence, the Supreme Court set aside today a judgment for \$6,200 awarded to Charles Yarrington of Neptune against Dr. Willard L. Pittenger, a dentist of Asbury Park. Malpractice was alleged. Yarrington sued on behalf of his daughter, charging that Dr. Pittenger had allowed a part of a tooth which he extracted to pass down her throat. He got an award of \$5,000 for the girl and \$1,200 for himself.

THE EASTERN ONTARIO DENTAL ASSOCIATION

Will hold its annual meeting at the Chateau Laurier Hotel, Ottawa, on October 1st, 2nd and 3rd, 1928.

The clinicians and essayists are:

Dr. Hugh A. Ross, Toronto—Operative.

Dr. W. G. Switzer, Toronto, Prosthetics.

Dr. D. P. Mowry, Montreal, Periodontia.

The entertainment features of the convention will not be overlooked and you are promised a very pleasant and profitable visit to the capital.

You will soon receive your copy of the programme, so please mark off the dates and decide definitely to come to Ottawa to assist in making this year's Eastern meeting the most successful in its history.

W. C. Macartney,

Chairman Programme Committee.

DR. ARTHUR W. SMITH

Of Simcoe, believed to be the oldest living graduate of the Royal College of Dental Surgeons, and who has been made the recipient of a resolution of remembrance from the Board of Directors of that institution. Dr. Smith, who has almost completed the four-score cycle, received his diploma from the college in the year 1874, at the time of the organization of the present school. He had been practising at Cayuga prior to that time. Shortly after his graduation he went to Simcoe, where he continued in active practice for the remarkable total of 47 years, which is believed to be a record in the dental profession of Ontario for continuous practice, in one place at least. Dr. Smith states that he does not believe there is one single colleague remaining of that group who graduated in dentistry more than 50 years ago at Toronto.

Toothache and rheumatism are the results of injudicious eating.



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**DR. W. C. KAAKE, DIES IN
WINNIPEG**

Dr. William Charles Kaake, 426 Banning street, a well-known dentist, died at his home recently in his 73rd year. He is survived by one son, Clifford, of Winnipeg; two daughters, Mrs. C. A. Hall, of Winnipeg; and Mrs. W. B. Brooks, of Toronto; also one sister, Mrs. Thompson, of Winnipeg, and a brother, Frank, of Winnipeg.

Dr. Kaake was born near Toronto, and came west 40 years ago. He practised in Portage la Prairie, then mov-

ing to Winnipeg 18 years ago, where he has resided ever since.

**ROYAL DENTAL SOCIETY
OFFICERS, MONTREAL**

The following officers were elected for the term 1928-29; Dr. H. H. Pearson, president; Dr. B. Gold, vice-president; Dr. L. S. Eidinger, secretary; Dr. P. Solomon, treasurer; executive, Dr. B. L. Hyams, Dr. S. Feldman, Dr. F. Mendel, Dr. A. S. Solomon, Dr. G. Franklin, Dr. C. Finklestein; Dr. S. Feldman, librarian.

FOR SALE—Dental Electric Engine, wall attachment, new motor, Ritter control. Priced for quick sale, \$100.00. Box 61, Dental Journal, 73 Richmond W., Toronto.

EXTRA-SPECIAL—Recut Finishing Burs dozen 35c—Recut Burs—Round—dozen 20c—Dr. Peck's Improved Inlay Wax 25c—Highest price for your scraps. Send along your USED BURS for PERFECT Recutting, dozen 25c—APPROVALS ON HAND. Sheun & Co., 1215 Diversey Parkway, Chicago, Ill.

SITUATION WANTED—Lady of refinement and ability desires position as secretary or assistant in doctor's or dentist's office, in Toronto, part or whole time. Box 63, Dental Journal, 73 Richmond W., Toronto.

DENTAL OFFICE TO RENT—Vacant October 1st. Abundant light, south exposure, quarter oak floors, hot water heating. Over twelve years a dental office. Central, best block in city. Decorating etc., as required by tenant. Apply E. C. Harvey, Druggist, St. Thomas, Ont.

WANTED—Partnership with ethical practitioner. Applicant has had 10 years' experience. Would consider purchase of practice of not less than \$5,000 yearly income. Box 57, Dental Journal, 73 Richmond W., Toronto.

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DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

OFFICIAL ORGAN OF LEADING DENTAL ASSOCIATIONS IN
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Editor. A. E. WEBSTER. D.D.S., M.D.S., M.D.
Honorary Dean Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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Dominion Dental Journal

Vol. XL

TORONTO, OCTOBER, 1928

No. 10

ORIGINAL COMMUNICATIONS

The Acute Jaw

E. F. RISDON, M.B., F.A.C.S. D.D.S.

Infections of the jaw following surgical procedures are frequent and perhaps more frequent than they should be, and recently our attention has been drawn to the fact that our teaching may be at fault. We are forced to the conclusion that more clinical teaching is necessary and by that we mean that the student should be in as close attendance on these cases during his college course as possible, as heretofore, to a large extent, he hears about the accidents and surgical disasters, but is not privileged to be as close to the case as he should be. A certain per cent. of cases, no doubt, following a simple extraction will become infected, or perhaps the incident of infection in these cases, will be greater due to the relatively large number of bacteria which are always present in the mouth.

We wonder if infection means merely the forcing of residual bacterial organisms below the mucous membrane by some surgical instrument, whether by the forceps or in some other mechanical way, or if it means

that you have added some other bacterial infection to the present flora, and by so doing you have introduced a type of infection, against which the system exhibits little or no resistance.

It is very likely that the ordinary germs which are present in the mouth from day to day have raised the body resistance to a certain extent. If these were forced below the mucous membrane, the surrounding tissue would likely react in such a way as to render them more or less innocuous and in this way, perhaps a local and limited infection would result, but if some new organism is introduced to the body, minus a resistance for this organism, likely a general infection or septicemia would result.

The types of infection, generally speaking, may be divided into infected soft tissue and infected bone, and the second type is of course, more serious. Normal bone is not well supplied with sensory nerves as is well demonstrated at any time, by pressure over bone, but if it is infected, increased pressure due to inflammatory products, causes

considerable pain. While thinking of bone from this standpoint would it not be well to consider that as there are no normal blood vessels, supplying bone directly, and that blood spaces which do exist are mere channels for blood to enter from arteries and then to be removed by veins, is it not a fact that the intervening spaces if infected, the blood stream will become infected too. To repeat the above, we mean that bone filled with spaces which have normal blood in them if infected, really infect the blood stream itself. How serious this is, is frequently demonstrated, say in a case where a tooth has been removed with very little swelling about the jaw or contiguous areas, but the patient has a very high temperature, between 103 and 105, and is seriously ill. The point one wishes to make is that while the systematic reaction is marked, the local area, namely the alveolar process is almost quiescent, perhaps a little pus may be escaping. I know you are well aware that the treatment for septicemia is rather limited, and most cases die before any resistance to this infection is established.

The more hopeful types of case to treat are the ones where, first, the soft tissue is infected and second, where it is limited to the bone. Of course, grades of both these conditions may be met, and in the first, that is the treatment of the soft tissue infection, quite frequently small or large necrosed sections of the mucous membrane, surrounding the muscle may be cut away, and in this way, limiting the absorption. To augment this treatment, hot saline mouth washes should be used hourly, a laxative given every two days and orthoform powder may be sprinkled over the raw surfaces if there is considerable pain, otherwise some of the anodynes, such as codeia, morphine, etc., may be used, and at the same time the patient should be urged to drink from two to three quarts of water daily. These cases as

a rule do well and clear up with little or no disability and in a limited time. The blood examination does not reveal a great deal, the white blood count is raised but very little, the temperature is seldom over 100 and the patient as a rule is not very ill.

The infected bone cases, and by that we mean the type limited to the bone, where Nature has thrown out round celled infiltration will limit the infection to this area and we believe that the treatment of these cases is largely the exercise of good judgment, and they seldom should be opened under the fourth or sixth day and perhaps not that soon. If it is necessary to open into them, any disturbance in this local area should be done by gentle manipulation with gauze and if loose fragments are encountered, they should be lifted out very gently, and in this way we hope that the area of round celled infiltration is not penetrated or broken down. There may be one exception to this rule of delay in these cases, and that is where perhaps a third molar has been removed, and owing to the residual or the introduced infection, inflammatory reaction results in a localized stasis in the bone, and owing to this congestion, the drainage is blocked. As a further consequence of the poor drainage, considerable pain is felt by the patient and is of a continuous low-grade type, in some cases lasting for weeks and the patient able to sleep only for short periods at a time, even with heavy doses of morphine. This is the exception we spoke of, when we would operate a little earlier, being governed largely by the pain. In these cases, we would expect to find considerable detached bone, poorly formed inflammatory tissue, separated by beads of pus and the inferior dental nerve and artery (if the artery remains) exposed for some distance, but seldom do you find the inferior dental artery at this time as one of the earliest symptoms of secondary infection is a brisk hemorrhage and that

would likely mean obliteration of the artery. The operative procedures at this time should be limited to the removal of the necrotic and loosened bone and if curettes are used, they should be large and spoon-shaped and only used for the removal of the by-products of inflammation. Under no circumstances should one drill or penetrate Nature's barrier, the round celled infiltration. The subsequent treatment in this case would be in the maintenance of good drainage by the

use of iodoform gauze and the application of heat both inside the mouth and outside for some time.

We do not believe that you limit the inflammation of bone by cutting away the bone too freely and in our experience if good drainage is established and maintained, these cases will do well, although many months may elapse in the more advanced cases before a cure may be effective and it is well to so inform your patient.

Toronto, September, 1928.

Extraction of Teeth a Major Operation

The extraction of teeth is a more serious operation than most persons realize, we are told by a reviewer in *The British Medical Journal* (London). It is a curious fact, he says, that, despite the horror universally evoked by the sight of the dentist's forceps, tooth extraction is still widely regarded as a very minor, almost contemptible, operation. He continues:

"'Oh, whip it out with a whiff of gas!' is the attitude of many people, both among the laity and among members of the medical profession—as if shock and sepsis were unknown after operations in the mouth.

"In a post-graduate lecture at the Royal Dental Hospital of London, Dr. Harvey Hilliard, senior anesthetist to

that institution, urged the importance of a more serious view of tooth extraction, especially of multiple extractions. He holds that multiple extraction of teeth should rank as a major operation, to be performed in a nursing home or at the patient's own residence, after due medical examination (including blood examination) and proper preliminary preparation; and that an adequate period of convalescence should be arranged for, and the patient immediately fitted with temporary dentures, so that he can partake of the diet he has found by experience best suited to him, and thus be saved from the risk of being half-starved, with its inherent danger of consecutive disease."

Ammoniacal Nitrate of Silver Supplement to Theory and Function

In the statement "no harm results when the solutions come in contact with soft tissues"—caustics or escharotics are substances which destroy living tissue. In their original form each chemical has powerful destructive properties on the soft tissue, but an unusual chemical union completely removes the caustic properties. Formalin is not applied until Silver is absorbed into a diseased area; in other words, Formalin is united with Ammoniacal Silver Nitrate within the tooth. It is therefore plain that the operator must follow instructions. Except through incorrect applications, there is no reason for the solutions coming in contact with other than diseased tissue.

"Only diseased tooth structure is discolored." There is a difference between deep disclosures and surface stains. The Silver solution will not penetrate into cell fluids without pathology. Deep discoloration is due to deep infection in the tissue. Patients should be advised accordingly.

There is no inclination to lead to the belief that Pyorrhea is cured. The function of the solutions is to destroy micro-organisms in cementum and dentine.

The subject of the pulpless tooth in relation to health is still open to discussion. Focal infection is not the

subject. A root canal filling which shows the canal filled according to accepted methods, only shows that careful work has been done, nothing more. Every major operation is not expected to be successful. This does not mean there should be no major operations, but the percentage of successful operations is greater if carefully done than if carelessly performed. Every root canal operation is not expected to be successful any more than every major operation is expected to be successful. There are operators who, through careful training or natural skill, have greater adaptability than others. The results in sterilizing pulpless teeth, as in any endeavor, therefore depends largely upon the operator.

The results which are explained can only be accomplished when the solutions are properly prepared, used with extreme care, and applied in strict accordance with directions.

Operators who use their own ideas or a solution not properly balanced will undoubtedly experience irritation and discoloration.

The requirements demand sterilization of teeth which are diseased. There is no middle ground. Microbic life has the power to kill live teeth. Prevent their propagation and growth, then nature will restore and maintain health.

Capping of Vital Pulp

CARL J. GROVE, D.D.S., F.A.C.D., MINNEAPOLIS.

We are prone to think of all injured tissue as being capable of healing. Usually, this process does occur, but there are some cells of the body which do not regenerate, and the odontoblasts seem to be one of that kind. In the process of healing, scar or fibrous tissue is usually formed, although this does not occur in the injury of the pulp, at least not following the destruction of the odontoblasts. The process of healing is dependent on certain characteristics of the cells, and this quality seems to be lacking the pulp tissue; yet the odontoblasts are capable of bringing about certain forms of repair, such as formation of dentin under favorable conditions. When slow destruction of dentin takes place, as in the wearing away of the dentin by mastication, a stimulation of the odontoblast follows, causing a recession of the pulp, and a deposition of dentin occurs. Since it is the function of the odontoblasts to form dentin, such results would naturally be expected, but the odontoblasts do not possess the qualities of regeneration.

Observation leads me to believe that when destruction of that part of the odontoblasts which exists in the tubules occurs, it ceases to function and atrophy follows. I believe this condition takes place whether the destruction is brought about by decay or mechanical means.

If regeneration of the odontoblasts does not occur, it cannot be expected that capping of exposed pulps will be successful. I am strongly of the opinion that such treatment is never permanently successful.

Owing to the fact that the pulp is made up largely of embryonic tissue, much should not be expected in the way of repair of the injured parts, for it lacks many of the necessary characteristics possessed by fully developed cells. The fact that this organ lacks these qualities indicates that it was never intended to function in this manner. I believe that it is hopeless to expect any method of pulp capping to be successful under such conditions.

I am fully aware of the fact that sometimes a pulp will remain vital after capping. This does not prove that such a result is permanent, and since there never has been sufficient evidence offered to show that this treatment is satisfactory, we must question the advisability of such methods, especially since a large number of failures are met with, and for the reasons already given.

As further evidence that this method cannot be satisfactorily applied, I wish to say that, in my experiments conducted on dogs, to determine the results of pulpectomy, it was found that the remaining portion of the pulp invariably degenerated, with evidence of periapical infection.

I do not believe that we should do pulp capping promiscuously: we should select our cases with care. The cases that justify capping of exposed pulp are those in which the root end has not fully developed. In these cases, it is doubtful that a successful root canal operation could be performed, owing to the large size of the foramen. I believe, therefore, that pulp capping would be justifi-

able provided favorable conditions exist; that is, when putrefaction of the pulp has not taken place to any great extent.

If vitality of the pulps of such teeth can be retained for a time, permitting the development of the root end, a most valuable service will be rendered. After this stage of development has been reached, the pulp can be removed, a root canal operation giving reasonable assurance of success.

Pulp capping should never be regarded as a treatment assuring permanent results.

Owing to the difficulty of making a diagnosis in most cases, especially if decomposition has taken place, it cannot be expected that any method will be successful in retaining vitality in all the treated cases.

To retain vitality it is necessary to prevent decomposition, and this can be accomplished only by sealing in a remedy that will control the activity of bacteria. I question that it would be possible to sterilize the dentin to prevent decomposition by such means.

It should not be necessary to state that the rubber dam must always be applied and the same care used that is required for successful work in other branches of dentistry.

I can see no objection to leaving a layer of decayed dentin over the pulp.

By my method, a stiff paste is made by mixing the powder of a cement and the liquid hydrated chloral. This liquid is prepared by triturating equal parts of hydrated chloral and thymol in a warm mortar, which causes them to liquefy. A small portion of this paste is placed directly over the pulp, after the softened area of decay has been removed, and the cavity thoroughly dried, and the pulp is covered with white copper cement, as this seems to be less irritating than most cements.

The results of work done by Elmer S. Best are apparently proving satisfactory. While he does not approve of pulp capping as this is generally understood, he has worked out an operation for preserving the vitality of the pulp which, in his hands, has proved very satisfactory. He proceeds as follows: With the rubber dam adjusted, all the softened dentin possible is cautiously removed without actually exposing the pulp. The cavity is thoroughly irrigated with a warm surgical solution of chlorinated soda, dried and an antiseptic applied to the base of the cavity immediately overlying the pulp. This is covered with oxychlorid of zinc cement and the cavity filled with oxyphosphate cement.

Vitality tests of the pulp in these treated cases should be made frequently, and roentgenograms should be made occasionally to determine whether the root end is developing.

The question naturally arises as to what should be done with teeth having exposed pulps not suitable for capping. My answer to this question is: Remove the pulp and fill the canal. While claims are made by eminent investigators that all pulpless teeth are infectious, proof to substantiate these assertions is still lacking. It is true that the technic used by these investigators does succeed in obtaining a growth of streptococcus from these roots, but I wish to call your attention to the error in this technic. Before doing so, I should like to have you gain a clear conception of the structural make-up of the teeth. I realize that it is preposterous for me to dwell on this simple matter, but it is important that one have a proper conception of the anatomy of the teeth in order to comprehend the point that I wish to emphasize.

The outer covering of the root, cementum, is an impervious structure. The dentin, as you all know, is a tubular structure. It should be re-

membered that there is no relationship between the dentin and the cementum. Bacteria cannot pass from the dentin into the cementum; therefore, it is possible to have infected dentin without having the organism pass through the cementum into the blood stream, where the foramen is hermetically sealed. If the organisms do not reach the outer surface of the root, how can such a tooth be infectious? In the method used in obtaining cultures for these experiments, the end of the roots are snipped off and dropped in the medium. These root ends have dentin as well as cementum and naturally if the dentin is affected, a growth would be obtained. These results do not prove that the bacteria are in the cementum as the reports of these experiments imply.

As further proof that pulpless teeth are not all infected, I wish to state that a large percentage of the teeth showing no roentgenographic evidence of infection will, if examined microscopically, be found to be free from infection of the periapical tissue.

The fact that cementum is laid down in the foramen of teeth after the pulps are removed proves that infection does not follow immediately, for cementum could not be formed in the presence of infection. This fact also refutes the theory that infection is a result of lowered resistance produced by pulp removal. There is every reason to believe that the tissue formed in this process of healing affords a most satisfactory repair. There is no reason to assume that infection will occur in the membrane that is in contact with the newly formed cementum in the foramen. There would be just as much reason to believe infection would result in the tissue lying in contact with the cementum on other parts of the root, since the same pericemental membrane covers entire root. The cementum receives its nutrition from

the membrane, and it must be remembered that removing the pulp has no effect on the membrane or cementum. The cementum formed in the foramen is no more susceptible to infection than cementum formed on other parts of the root. A pulpless tooth is not a dead tooth, as is so often implied by some investigators.

The profession is rapidly coming to realize that the mere removal of the pulp is not responsible for periapical infection, and the fact that some pulpless teeth are not infected disapproves such a theory.

The absence of the pulp or the fact that a tooth is pulpless is not the cause of periapical infection, but this condition makes infection of the investing tissue possible, owing to bacterial invasion. Time will not permit a discussion of the various means of bacterial invasion, but I do wish to say that the transportation of these organisms can often be prevented, and thus periapical infection can be avoided.

The question now naturally arises as to the causes of periapical infection. There are a number of reasons for the development of this condition, and dentists are responsible for a large percentage of these cases of infection. Many teeth become infected in the treatment, or at least during the root canal operation, owing to lack of asepsis and a total disregard for the welfare of periapical tissue; in other words, because of injury of the periapical tissue during the operation.

The tissue should never be removed beyond the dentinocemental junction. Absolute asepsis must be observed at all times during the operation. More than a decade ago, I called attention to the fact that if the tissue was removed only to the dentinocemental junction, cementum would form to close the foramen, and this work has since been corroborated by many investigators.

The most important part of the root canal operation is hermetic sealing of the apical portion of the canal. There are perhaps only a small percentage of teeth treated which do not have infected dentin previous to treatment owing to decomposition of the pulp tissue. If the canal is not perfectly sealed, bacteria will escape from the infected dentin into the periapical tissue, infection resulting. This fact does not seem to be generally recognized by the dental profession. It can readily be seen that if space exists, bacteria will surely find its way to the tissue at the apex, through the nutritive liquids which diffuse into such spaces, from the periapical tissue. Laboratory experiments have also proved that it is possible for diffusion to take place through ill-fitting crowns and fillings. This would be another means of nutrition reaching bacteria in the dentin.

One of the important problems before the dental profession today is to decide on a technic that will be known to seal canals hermetically.

The first requisite of such a method is that the root canal material used must possess the essential physical properties: the material must be impermeable. Laboratory experiments conducted have proved that many of the materials offered the profession do not fulfil these requirements, because of their permeability. Diffusion will take place through such root filling furnishing nutrition for the bacteria present in the dentin, and also furnishing an avenue for their escape to the periapical tissue. These experiments also showed that diffusion may sometimes take place through secondary dentin existing in the root canal. Therefore, I believe it is very important that all of the secondary dentin be removed before the root is filled.

The difficulty with the methods now used is that one does not know that

the apical portion of the canal is hermetically sealed. While the roentgenogram does show when the canal is filled to the desired point, it does not show that the diameter of the cone is sufficient to fill the entire canal; in other words, the cone used may be long enough, but smaller in diameter at the apex than the canal, leaving space for the escape of bacteria.

The only practical method would be to standardize the cones in diameter as well as in length as to the reamers to be employed, using roentgenograms to determine when the desired apical point is reached by the reamer establishing a shoulder in the pulp chamber for measuring to the apex. Such a method would assure a complete sealing of the entire canal, preventing the possibility of bacteria escaping from the infected dentin to the periapical tissue.

The cones would need to be sufficiently rigid to prevent distortion. I have found gold cones very satisfactory.

It does not seem right that all pulpless teeth should continue to be extracted, as is being done in some sections, merely because the average general practitioner is not inclined to acquire the necessary skill to do this work satisfactorily.

A large percentage of pulpless teeth become infected because the operation is not properly done, and not because of the impossibility of doing the work properly, and it seems to me that an effort should be made to correct this situation.—*The Journal of the American Dental Association.*

EDITOR—In the previous pages appears the statement that "the removal of the pulp has no effect on the membrane or the cementum." Black in his experiments on the power of closing the jaws found that teeth with non vital pulps would not allow their owners to apply as much

pressure as the same teeth before pulp devitalization took place. Something must have happened to the peridental membrane or the supporting structures someplace.

In another paragraph the writer says "the most important part of the root canal operation is hermetic sealing of the apical portion of the

canal" and suggest standardizing cones to fit canals reamed to a certain size. He recommends gold wire cones. One would expect this to be difficult and if it were done as nearly mechanically perfect as possible in such a location still we doubt its ability to prevent the passage of bacteria.

The Root Canal Problem

C. EDMUND KELLS, D.D.S., NEW ORLEANS, U.S.A.

(Read before the Queensland Dental Graduates' Association)

With Australia seemingly one million miles away from the orange groves and cane fields of Louisiana, it is not possible for me to be conversant with the methods of practice of your boys of this study club, but I reckon it's a hundred to one shot that immediate root-canal filling is not your routine procedure. And, if it is not, that's where you and your patients—especially your patients—are "missing a trick."

There was a time, but that was in years long gone, when I was rather diffident about talking immediate root-canal work, because I was not so sure of myself, but to-day, after forty years of this practice, I feel that there is no question about its success. It is sound in principle and in practice. The acid test of time—twenty-five years and more—has been applied to the result obtained by this method, and what more do you or I want than satisfactory clinical results?

When I see a patient, as I not infrequently do, for whom I filled an abscessed tooth more than twenty-five years before, and I find that tooth apparently in good condition, I find the patient in a really good condition, and a skiagraph shows an

apparently satisfactory apical area, that is all I ask.

I am perfectly aware of the fact that the methods I pursue, and have been using (successfully, I hope) for the past forty years or more, are apparently not approved by or taught in any dental school in the land. This fact, in itself, is sufficient to make a dental student lose interest in my work, but, nevertheless, there really must be something in it, because some men here and there are found to believe and practise immediate root-canal filling.

I would impress upon you the fact that a lot of careless dentists are continually speaking of "dead teeth." It is a well known fact that teeth have two sources of vitality: First, the dental pulp, and second, the peridental membrane. When the pulp dies, it becomes a pulpless tooth, and not a "dead" one, because of the peridental membrane. Should the peridental membrane die as well, then, undoubtedly, the tooth would be a dead one in fact as well as in name, because upon the death of the peridental membrane the tooth would be exfoliated.

Ancient History. — Before talking of the root canal work of to-day, let

me give you a little ancient history, that you may see what the dentists before your time had to contend with. When I began practice, gold foil was used to a great extent for the filling of root canals, and cotton saturated with creosote was also very popular. Just as a matter of interest, I have looked over my appointment book for 1880, and upon its pages I saw recorded both gold foil and cotton as the materials used for filling root-canals. Then zinc oxychloride began to be used for this purpose, and, as time went on, orange-wood, sandarac, paraffin, pastes of all kinds, and lead wire in combination with cement, were experimented with. Later on, came chlora-percha and gutta-percha points and other cements.

Now here's something that has always surprised me. If you were to call upon almost any dentist and, meeting him in his reception room, you were to say, "I have a tooth which requires filling; will you kindly tell me with what material you will fill it?" he would undoubtedly answer, "Why, I can't tell you that off-hand. I have a dozen or more different materials with which to fill teeth. I must examine your tooth before I can say with what it should be filled." Isn't that about right?

Then you say to him, "Well, here's one tooth in particular, in which the pulp is dead. I would like to have you fill its root-canals. What will you fill them with?" And it's a hundred to one that he will say, "A root-canal? Oh! I fill all root-canals with——," and then he will name some one special root-canal filling material, probably chloro-percha.

That is where the strange part comes in—he has a dozen or more filling materials for cavities, but only one for root-canals.

Do you mean to tell me that root-canals are all alike? Perish the

thought! As I find them, root-canals vary just as do carious teeth, and so, if you were to ask me the same question, I'd say, "Why, I couldn't tell you with what I'd fill the root-canal until I had prepared the root-canal for filling, because I have five different materials, which I use either singly or in combination, for the filling of root-canals, according to the necessities of the case in hand." Does not that appear to be more reasonable?

Instruments Used. — First of all would I say that I never use a barbed broach for the removal of a pulp, or for cleansing a pulp-canal. If I never put a barbed broach into a root-canal, I certainly never can break one off there. Kerr reamers, and perfectly smooth bristles, like the Caulk's Freepass, are all that I ever put in a root-canal. Straight canals are sometimes enlarged somewhat by means of the Kerr reamers. Curved canals are never enlarged. I do not use the conventional root-file, nor do I use sulphuric acid. I am perfectly willing to admit that I cannot fill all root-canals satisfactorily, and that all abscessed teeth which I fill do not get well but I certainly do my best.

The Diagnostic Wire—Upon placing a diagnostic wire in a canal, and the skiagraph showing that the canal is curved and that my wire does not go to within a sixteenth or an eighth of an inch of the end, I sometimes stop there, because I have found that, sometimes, upon trying to get around that bend, I go straight on through the side of the root. However, I do my best to "make the curve" before I give up. In that event, when I do not "make the curve," I sterilize as usual, not forgetting the phenol or creosote under pressure, and just do the best I can. As a rule, when I make such an unsatisfactory root filling, I give my patient a skiagraph of the tooth, explain the situation, and tell him it's the best I can do, and that I hope he

will show the picture to the next dentist to whom he goes.

Curing Abscesses. — Next comes the question, "What do I propose to do to a root that is abscessed? Do I propose to cure that abscess?" Not a chance! All I hope to do is to remove the cause of the abscess, and with the cause of the abscess removed, "Dame Nature" comes in and effects a cure.

Sterilization. — Another question: "Is it essential to sterilize the root-canal and adjacent tooth structure (dentine)?" It certainly is, and it is usually possible. Again: "Is it essential to sterilize the diseased apical area?" This time I say it certainly is not essential to sterilize the diseased apical area, nor is it probable that it can be done in routine practice.

Lister's Principle. — Upon what do I base this opinion that it is not necessary to sterilize the diseased apical area? Upon the same principle as that upon which surgery is based. The great Lister, father of modern surgery, admitted that it was absolutely impossible to remove all organisms from a wound, and that the natural tissue resistance was sufficient, in a carefully handled wound, to prevent the few organisms left behind from doing any harm.

Perfectly Well Grounded Formula.

—I base my root-canal therapy upon the following:—(1) That it is possible to sterilize and fill an infected root-canal in one sitting. (2) That it is hardly possible, by means of ionization or any other treatment, to eradicate all organisms from any infected apical area. (3) Those organisms left in the apical area, located as they are in the alveolar process, well provided as it is with blood vessels and lymphatics, are then taken care of by the "natural tissue resistance" of Lister.

The Alveolar Abscess. — The root-end is normally embedded in the highly vascular alveolar process, re-

plete with blood vessels and lymphatics. With an abscess at the end of the tooth, the root-canal is nothing more nor less than a test tube situated in an ideal incubator, and in this test tube the pathogenic microorganisms proliferate joyfully and indefinitely.

Infected areas are ordinarily eradicated by Nature's sending in an army of white blood corpuscles and their allies, which attack and destroy the harmful bacteria, but in such a case as the one under consideration, hosts of bacteria are firmly entrenched in the bomb-proof root-canal, and are thus absolutely out of the reach of these white blood corpuscles or their allies.

No matter how fast Nature destroys the bacteria found upon the edges of or in the abscess proper, inexhaustible reserves are continually being brought up from the canal itself, and so a cure cannot be accomplished.

Diffusion of Liquids. — When two miscible liquids are brought into contact, the process of diffusion is at once instituted, and, in a very little while, they are thoroughly mixed. Now, then, the tubuli of a pulpless tooth are not empty; they are naturally filled with a liquid, and when the canal is filled with phenol, diffusion of the two liquids takes place rapidly, and so the phenol is carried at once throughout every minute dental tubule, and destroys every organism with which it comes in contact.

Sterilization. — The first requisite for root-canal filling is the complete sterilization of the root-canal and tubuli. If the apical area is infected, an attempt is made to sterilize that also, which is advisable though not necessary. We start out with the knowledge that, first of all, phenol will kill any organisms to be found in the mouth, and next, that if we fill a root-canal with phenol, it will, by the well-known laws of diffusion

permeate all of the fine canals and tubuli, and kill any organisms found therein as "dead as Hector." Phenol is a colourless liquid; consequently, if we take a tooth in the hand and flood the root-canal with it, it is not possible to see just where the phenol does go, but if a few crystals of iodine are dissolved in the phenol, and this is placed in the canal, then, indeed, can be plainly learned what happens.

To me, this is a wonderfully interesting and instructive experiment. Just try it. The tooth must not be a dried one, of course. The conditions must be similar to those found in the mouth; so, if dry, it should stand in water for a day or two. Swab out the canal until it is fairly dry. In a few drops of phenol, dissolve a couple of iodine crystals. Pump this coloured phenol into the root canal and, in a few minutes, the whole tooth will be saturated with it. Fill the root and then, a little later, grind the root flatwise, down to the canal, and the iodine will be found distributed throughout the root. As the iodine was carried there by the phenol, it shows how thoroughly the tooth was permeated by the phenol.

Sterilizing Agents. — For sterilizing root-canals, I pin my faith to phenol (deliquesced crystals) and Morson's Beechwood creosote. If I can place the dam in position and have a clear field to work in, phenol is used. If I cannot use the dam, and I am a little fearful of getting some of the phenol upon the gum or cheek, which would cause trouble, then I use Morson's Beechwood creosote.

If there is a fistula, after the canal is well cleansed, I place creosote or phenol, whichever I am using, into the canal, saturate a wisp of cotton with the liquid and place it in the canal; place a pellet of cotton saturated with the liquid over this, and then, with a little cone of softened pink base plate gutta-percha (never

unvulcanized rubber) pressure is caused upon the contents of the canal, and if we have good luck, some of it will be forced through the fistula.

If phenol is used, one must be very careful to see that it does no harm to the lip or cheek. I usually place a good sized pellet of cotton, saturated with alcohol, over the opening of the fistula. The sterilizing agent—phenol or creosote—is always used under pressure in this manner, the last thing before drying and filling all root-canals, fistula or no fistula.

I say that I believe it is possible to sterilize an infected root-canal in one sitting, and now I'll tell you why I believe that to be true. In the first place, I have cleansed, sterilized and filled hundreds of abscessed roots, each at one sitting, and skiagraphs taken years afterwards showed that the radiolucent apical areas had apparently filled in with normal bone. That, to my mind, is indisputable proof that those teeth were satisfactorily sterilized and filled.

In the next place, I have isolated a tooth and taken a specimen from its canals. Then I cleansed and sterilized the canal, and just when it was ready for filling I took a sterile cotton wisp and rubbed it up and down that canal to the very apex. Those two specimens were then cultured, and while the first one proved to be infected, the second one proved to be sterile. Again have such teeth been watched for years—twenty-five and more in some instances—and the skiagraphs and clinical results checked up with these findings. That's all I ask. I tell you frankly that successful clinical results satisfy me.

In the third place, I have taken extracted teeth, and, while in the hand, have infected them with streptococci which I obtained from a friendly pathologist. I then treated them just as I would a tooth in the head, and sent them to my pathologist, who cracked them open and

found them sterile. Therefore, taking it all in all, I feel that I am justified in claiming that a root-canal can be sterilized in one sitting.

Classifying Abscessed Teeth. — The reason I have five kinds of root-canal fillings, as I have just told you, is because I find that all root-canals are not alike, and therefore I classify root-canals as follows: (1) Large open foramen. (2) Small open foramen. (3) Closed foramen.

Requirements for Root Canal Filling. — There are, as far as I know, only three necessary requirements for the filling of a root-canal. It must be clean, it must be sterile, and it must be dry.

If one can get a canal clean, sterile and dry in one sitting of thirty minutes or less, as much has been accomplished as if one had "treated" the canal for a month of Sundays.

Filling the Canal. — If an open foramen, a solid material, such as gutta-percha point, wire, or orange-wood point, must be prepared, that will just go to place and seal the open foramen. The cement is mixed to the consistency of a thick cream. A cotton wisp is wound tightly upon a suitable Kerr reamer for all large canals, and upon a suitable bristle for fine canals, and sterilized, of course. This is covered with the cement, and then carried up to the apex of the root, and no further, by means of my root-canal gauge, and the canal is well swabbed with the cement. This insures a close contact of the cement filling and the wall of the canal.

The solid material — gutta-percha point or wire—is then covered with the cement and carried to place, sealing the apex. More cement is then packed in the canal, and other wires, or gutta-percha points, as the case may be, are also used when necessary. Every effort is made to get the canal packed solid. The pulp chamber is then partly filled with the cement, and that is packed down

with hard cotton balls, using some little pressure. If all calculations turn out well, a skiagraph will show the apex sealed, and no cement has been protruded. Then the cement is removed from the pulp-chamber, which pulp-chamber is always filled with agate cement—"no exceptions," as they say in the law.

Filling Materials.—As far as I know, there are now used four classes of root-canal filling materials:—Solutions (such as chloro-percha), cement, pastes, solids (gutta-percha points). Personally, I have no use for chloro-percha. I have used it but very few times in my life. I have always considered that, in my hands, it is the poorest of all materials for this purpose, and I note with pleasure that a number of our leading men, who have, in past years, been the strongest advocates of chloro-percha, have now abandoned it and are using cements. That speaks for itself. It proves, beyond doubt, that chloro-percha failed them in the end.

I have tried pastes and about everything else in my time, and have come to the conclusion that a cement is best of all, and I use one formula exclusively. It has a horrible name ("Puscure"), but it is certainly a good material. In order to fill the three classes of root-canals already described, I use Puscure alone or in combination with gutta-percha points, iridio-platinum points, or orange-wood.

You will note that I just said, "If the foramen is open, a *solid material* must be prepared that will go to place and seal the foramen." In a short paper like this, it is not possible to cover the technique of just how this is done. Full details are given in a paper read before the New York State Dental Society, May, 1923, and published in "The Dental Cosmos," 1923, and also in "Three score Years and Nine," page 348.

Protrusion of the Root Canal Filling.—After a root-canal is opened up, cleaned and dried, it is the easiest

thing in the world to fill the canal with some plastic material, work it up to the end of the root, fill the pulp-chamber with this plastic material, cause pressure by means of soft rubber or wax, and squeeze a lot of this filling material through the open root-end. This method is, I admit, easy and quick, and is advocated by some men. However, this appears to me to be a sloppy way of doing the work, and I never use it. I will admit that in my work, at times, some of the cement does find its way through the apex, but it is unintentional. I endeavor to fill the root to the end and no further.

With this object in view, I use orange-wood or gutta-percha points and cement for a large open foramen; iridio-platinum wire and cement for a small foramen, and when the foramen is closed, I use whatever material is best suited to the conditions found. Long years ago, before the day of gutta-percha points, I used lead wire, orange-wood and gold points. Of late years, iridio-platinum wire points have been used instead of the gold.

Choice of Evils.—It is all very well to say, "Fill to the end and no further," but that is not always so easy to do. With a putrescent pulp in hand, I'd prefer to protrude a sterile iridio-platinum wire or gutta-percha point a little, rather than have it not fill the canal. When a healthy pulp has been removed, I'd prefer to fill a little short of the apex, rather than to go through—and that's the difference.

The Diagnostic Wire.—Speaking of filling root-canals with lead wire, here's an item of interest taken from my records. On May 10, 1899, I was working for a little boy when it occurred to me that I might "get a line" on the length of an upper central with a large foramen. I placed a lead wire in the root, and skiagraphed it. This proved to be such a success that ever after I would place a wire of some

kind in the root-canal and ray it, and today the use of the "diagnostic wire," as it is called, is, as you know, practically universal.

So much for filling the canal with the open foramen. When it comes to the canal with the closed foramen, that is a very simple affair. With everything ready for the filling, the Puscare is mixed to a thick cream and pumped to the end of the canal, gutta-percha or iridio-platinum points being also used if found desirable. Again the pulp-chamber is partly filled with cement, and again hard cotton balls are used with which to pack it down.

The Question of Odour.—It is not unusual to see an operator remove a paper point or a cotton wisp from a root-canal and put it before his nose. If it has an unpleasant odour, he considers the root-canal not ready to fill; if it has no odour, then he says it is ready to fill. I am quite confident that the nose test is absolutely worthless; "Streps" have no odour, consequently when your paper point comes out "sweet and clean" to your nose, it could be alive with "streps."

Ready to Fill.—A root-canal is considered ready for the filling after it has been repeatedly flooded and swabbed with phenol and then dried. Perhaps this process has been repeated fifty times, perhaps one hundred. When I say "swabbed", I mean swabbed. I am not satisfied to insert a paper point for the purpose of drying a canal. I like to twist a cotton swab forcibly in the canal, which is thus forcibly scrubbed clean, just as one would scrub a dirty floor in preference to mopping it. When, after these repeated scrubblings, the cotton wisp comes out apparently clean and dry, then the canal is ready to fill. I never even purchase paper points.

Test for Moisture.—If one looks at a cotton wisp, which is only slightly damp, it is not possible to tell whether it really is dry or not, but if one will

draw this wisp across a piece of rubber dam, the slightest moisture will be shown upon the dam. That is my test for a dry wisp—the rubber dam.

An Important Technical Detail.—With an apical area filled with pus, or blood, or serum, it will be practically impossible to dry a wide open canal, if one constantly protrudes the cleaning instrument through the root-end and into this wet area. It will be simply impossible to get the canal dry, because every such protrusion starts the blood or serum to flowing. Therefore, the first step in the operation is to obtain the length of the tooth, root and all. This measurement is obtained, of course, by means of diagnostic wires and skiagraphs. Sometimes I take as many as three or four skiagraphs before I get what appears to be the exact length of the root.

Winding Cotton Wisps.—There's a trick about winding cotton upon a smooth bristle. The bristle is coated with the thinnest film of wax by drawing it across a cake of wax, while it is pressed down by the ball of the thumb or first finger. With the film of wax on the bristle, cotton can be wrapped upon it with the greatest of ease.

Post-Operative Pain.—Whilst post-operative pain should not follow a root-canal operation, nevertheless it does at times—that is in my practice—and it's about the worst kind of pain. The first thing to do upon the completion of a root canal filling is to slightly relieve the occlusion of the tooth, if it does occlude. If there is a very slight peridental irritation, the use of aconite and iodine, or the use of capsicum plasters of some kind may give some relief, but the chances are that if these remedies do any good, the trouble would have cleared up of itself.

For real peridental inflammation, I know of nothing that will give the absolute relief that the application of a leech does.

Confidence.—More than once have I

taken a tooth, so sore that I could not work upon it, made a novocaine injection which made it "dead to the world," and then proceeded to fill the root-canal. But, believe me, as soon as the root-canal was filled I applied a leech, and if I could not have obtained the leech, I can assure you that I never would have filled the root while the tooth was sore. I must not omit to tell you that, in all such cases, the soreness would immediately begin to disappear, and no further trouble ensue. This certainly does appear to show that I have some confidence in this method, don't you think?

Now in conclusion I would say this: I hope that you will try immediate root-canal filling, but if you do, please use phenol and an antiseptic cement, never chloro-percha. I realize that no matter whether I fill a root-canal in thirty minutes or treat it for six weeks, it may give trouble. Of every one hundred root-canals filled, I expect one or two to give trouble.

With that idea in mind, I impress upon my patient the possibility of trouble, and give them certain typed directions, which I expect them to follow. Herewith is a copy of these directions:—

Never use a hot water bag or electric pad directly on the face for any kind of pain caused by a tooth, or tooth extraction.

Poultices.—Make three small bags, out of old linen cambric, about the size of the end of your thumb, and about one and one-half inches long. Fill these half full of powdered slippery elm bark and sew them up. Place these in a saucepan of hot water, and keep the water hot while in use. Place one of these hot poultices in the mouth over the seat of pain—usually between the cheek and the tooth—and hold it there until cool. As soon as it becomes cool, place it back in the hot water, and put a hot one in the mouth. Keep this up for one hour by the clock, changing the poultices just

as fast as they get cool. Repeat this performance two or three times a day for as many days as may be necessary.

Antiphlogistine.—After the face has swollen, moist heat, as a rule, should be applied to the face. Antiphlogistine is the best agent for this purpose. This must be applied directly to the face, and covered, preferably, with a piece of rubber dam, gutta-percha tissue, or even waxed paper, if nothing better can be had, over which a pad of linen (an old handkerchief will answer) should be placed and then a bandage applied to hold it in place. This should be kept in place all night, and, if desired, a hot water bag or

electric pad can be used over this. Hot, weak solutions of Tichenor's Antiseptic or Pond's Extract can be used in the mouth, at frequent intervals, to advantage.

In addition to these local applications, Allonal tablets at intervals of an hour or two can be used. Not more than four tablets (Allonal) should be taken in twenty-four hours. In very severe cases, where these give no relief, Codein should be used, upon prescription only. Rubbing the face with camphorated vaseline or oil, for ten or fifteen minutes at a time, is soothing, and may hasten the reduction of swelling.—*Australian Dental Journal.*

Two Day Clinic at London

It has been arranged that the London Dental Society will hold a two day clinic under the Extramural Plan of the University of Toronto for all dentists of Western Ontario on Friday, 16th and 17th November, 1928.

The subject chosen has been "A Discussion and Demonstration of the Principles Underlying the Full Denture Problem," and is to be presented by Dr. Felix A. French of Ottawa. Dr. French will also give clinics carrying

a full upper and lower case through as far as time will permit and also upon the re-mounting of recently finished dentures for the purpose of studying and correcting possible errors in occlusion.

It is hoped that the dentists of Western Ontario will avail themselves of this unusual opportunity and accept the invitation of the London Dental Society to join with them in this two day prosthetic clinic.

Points of Interest in Root Canal Work

R. P. LAME, B.D.S., D.D.S.

It is difficult, where one is not given to scientific research, to find a subject that is really helpful for discussion. I shall deal, first, with Gates-Glidden drills. I bring this matter up because, to my knowledge, it has not been referred to at any meeting of the Society since I have been attending. These drills are so eminently useful that I intend to try and give some help in regard to their use.

I have chosen as my subject, therefore, the mechanical methods of opening up root canals and removing pulp tissue, with special reference to the use of the G.G. drills. The instrumentarium required is very simple, and consists of files and broach reamers, followed by Gates-Glidden drills, and then engine reamers. This graduation of instruments is a rather important factor, as the successful opening up and enlarging depends almost entirely on the correct method and sequence of using broaches, drills, etc. I consider that, wherever it is applicable, this method is preferable to any chemical process, for the simple reason that there is no danger of forcing any caustic drug through the apex, as no strong escharotics are needed. There is no staining of the teeth, and, for the most part, you are working in a dry field. That is a very great advantage. Further, the organic matter is positively removed and, after all, there is nothing like actual cutting to do that. Moreover, it leaves the canal in the correct shape for the filling.

Regarding dressing, you will find that if you use mechanical instruments like this, you can use your dressings easily. Once you have cut the right shape of the canal, it is a

simple matter. When you come to the root filling, you have the correct shape for the proper insertion of the G.P. points. Access, in all cases, is given to canals by cutting away the overhanging coronal portion. Then you must always keep to a correct sequence in the use of instruments:—First, the fine files and reamers, which are the pioneers of the whole operation, in that they search out the correct path for others to follow: then the Gates-Glidden drills come next, in three sizes; finally, there are the larger root reamers.

It is my experience that the straight G.G. drills are not nearly so useful as the right angle drills. Even in front teeth, I almost invariably use the right angle drills, because my experience is that the control of drills is increased by the use of the right angle handpiece. With straight drills, the whole forearm is in line with the drill, which gives a poor sense of touch; but with the R.A. handpiece, used with the fingers as a fulcrum, the most delicate sense of touch is possible. If you will remember that little matter of the right angle drill, you will find that it will take away a great deal of the dentist's dislike of the G. G. drill. I am sure that they are avoided because of the possible harm that can happen in their use, such as perforation of the roots, etc.

In the application of any drills, the correct way is to use large sizes first. That is contrary to what one would expect. Access is first obtained in a generous way; then the next size adds its extension, and so on, until the final drill gives the desired length. If you think about it, you will see the

force of this. Each time you are allowing much more freedom for the final drill to work. If you have a long, fine canal, and you attack it with a fine drill, you must strike trouble. I think that the most important aspect of this method is to use the largest size first. You can readily see, moreover, that, in the case of roots with a mild curve in them, by cutting the larger opening first, it is possible to gradually get round the curve. The larger opening that you are cutting gives you a little latitude for the subsequent use of the smaller sizes. It is very difficult to get satisfaction with very curved roots, but then, in any case, it is a matter of doing the best you can under the circumstances. In cases where you cannot get round at all, it, at least, gives you a very generous approach to the apical portion of the canals, and, of course, in those cases which have to be treated medicinally, it gives you an easy way of applying some drug for preserving or mummifying the pulp remaining.

The consideration of the shape of a Gates-Glidden drill will help you in its use. You will notice that it has a dull point, which, of course, is to feel along the track which it is to travel. This point will not cut. The cutting is done entirely on the side. It is not possible to use it with any lateral idea of cutting; it is purely a tracking instrument, and it cuts with the blades on the sides as it goes. Do not try to use force; if you do, you will probably get off the track, and, once off, it is very difficult to get back again. If you cannot get ahead, use a larger size, even to root reamers, but on no account use any degree of force. A generous opening of the cor-

onal portion of the canals will always help a great deal, and will save a lot of precious time.

The shank of the G. G. Drill is more slender away from the point. This is to ensure that if it does break, it will do so high up. Experience proves that the risk of breaking is very small if one is always careful to have free access, and to avoid using excessive force.

The dangers of using the G. G. drill are few, but I have set them out as follows:—(1) If you forget that there is an end to a root you can open up the apex too largely. (2) Getting off the track, which is caused by using too much force, and not using the large sizes first. (3) The possible danger of breaking the point high up. If you do break the point, you may be sure that you have been taking some liberty or other.

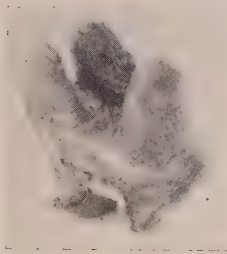
There is another point which I think might be mentioned here. In cases of anterior teeth where a dowel crown is to be used, do the opening up of the crown with reamers at the time of taking out your pulp, not after the root filling is inserted, because your reamer will open up the major portion of the canal. By that means, your pulp reduction is simplified immediately. It allows a very generous application of a large size G. P. point. Subsequently, the root filling, as much as is necessary for the dowel, can be removed with a hot instrument without any danger of disturbing the apical portion.

I can assure you, from experience, that a great deal of confidence comes to one with the use of these instruments, and if you lack that confidence, it is very well worth striving after.

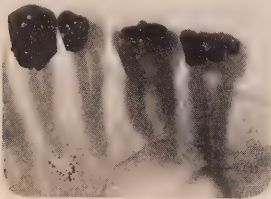
CORRESPONDENCE

Dr. A. E. Webster,
Toronto, Ont.
Dear Sir,—

I am enclosing upper right first molar which was devitalized and filled at the college, something over thirty years ago. Since then it has been refilled with M. O. D. gold inlay. It had been



feeling a little uncomfortable for some time although just as useful as any of them. One cause of the trouble seems to have been a little decay just above the disto margin of the inlay allowing particles to accumulate. The first and second bicuspid on the same



side were both devitalized about that time and are still in position. Although these teeth have not the rosy bloom of sweet sixteen, I don't see where they have done me any harm

and have always done their share in helping to dispose of three good square meals every day since with few, if any exceptions. Besides these I have four other devitalized teeth. I sometimes wonder if they should all be extracted at coming onto my age. I just thought that this might be an interesting discussion. What is your opinion.

—R. R. Harvie.

EDITOR—From among the scores of interesting letters we get from our readers we select this one as having special features. The length of time these operations have been serving their owner without noticeable effects



is interesting. The picture of the molar shows the three roots rather blunted from absorption and many incrustations indicating a pathological process. The X-ray pictures show little, if any, disturbance. While the X-rays are more or less negative, yet the history and the appearance of the extracted tooth would make one suspicious but not sufficient to warrant the removal of such teeth from a health man.

The Sterilization and Filling of Root Canals

C. F. RUMSEY, M.A., CANTAB, L.D.S., M.R.C.S. ENG., L.R.P.C.LOND.

It is axiomatic in medicine and surgery that when several different remedies or operative procedures are advocated for the treatment of any particular lesion, complete success is difficult of attainment. This is strikingly evident in respect of the subject under review; many and various indeed are the drugs and procedures suggested, but results still fall short of the standard of our hopes and desires.

In presenting this paper as a basis for discussion, I do not propose to enter the lists as a champion of any one method of treatment, but rather would I define my rôle as that of a chronicler, and, as a corollary, I waive all claim to originality as regards my subject matter, which has been culled from various sources. My purpose, in brief, is to marshal facts, and possibly some fancies, for your inspection; to envisage, as a first consideration, the condition we are called upon to remedy, and then to pass in review the various drugs and materials which have been used or suggested as remedial agents, with the assumptions upon which their advocacy is based, in the hope that by the harvesting of this material we may glean something of value which may help to elucidate some of the details of our problem.

With this end in view, it is essential that consideration should first be directed to the pulp.

It is not unreasonable to assume that pulp tissue and its vascular supply contain the same elements which

are present in any other animal tissue. These elements are carbon, hydrogen, oxygen, nitrogen, sulphur and iron.

It may also be stated that pulp tissue has as constituents the members, or derivatives, of the three classes of compounds normally comprising animal tissue, i.e., proteids, carbohydrates and fats.

I make this statement guardedly, as it is open to question whether the fats and carbohydrates play any but an infinitesimal part in pulp metabolism, as their function is to supply energy to muscular and glandular tissue. It is misleading, therefore, to accept a bald statement, that because pulp tissue is an animal tissue it is perforce comprised of proteids, carbohydrates and fats. A fallacious argument may be built upon an hypothesis of this nature.

With this reservation, therefore, we may next consider the products resulting from the decomposition of the pulp when death occurs. This may be defined as a gradual analytic process, micro-organisms attacking complex and unstable substances, splitting them up into less complex bodies, until simple and well-known compounds result.

The first to be considered are the amino-acids:—

Leucine is very widely distributed in the animal kingdom and is a substance of great physiological importance. It is found in the lymphatic glands, spleen, and especially in the pancreas. It is produced during the

putrefaction of proteins, also by the hydrolysis of proteins, such as haemoglobin. Pathologically, it is found in atheromatous cysts and in pus.

This amino-acid gives a fatty acid by the splitting off of the ammonia radicle in the absence of oxygen.

Tyrosine is also formed in the decomposition of various proteins. It is found in the liver in some diseases, and in the spleen and pancreas. It combines with acids and bases to form salts.

Trypsophane is a decomposition product of egg and blood albumin, and under the influence of putrefactive bacteria it is converted into idoleacetic acid.

Lysine yields ptomaines in presence of putrefactive bacteria.

Ptomaines or Toxins—Many of the amino-acids when attacked by various putrefactive organisms are converted into highly poisonous basic substances, which are classed as ptomaines, such as *neurine*, *putrescine*, and *cadaverine*. These compounds are consequently formed during the putrefaction of animal products which contain proteins, and it is to the presence of ptomaines that the toxic action of such putrid matter is due.

As a result of the further splitting up of these nitrogenous substances, the end-products resulting are chiefly water, carbon dioxide, acetic acid, ammonia, hydrogen sulphide and a semi-putrid substance containing some fatty acid.

Simultaneously the dentinal fibrillae are broken up and the tubuli are also filled with decomposition products. The principal gases generated are ammonia and hydrogen sulphide; the first in greater quantity, as nitrogen is in much greater proportion than sulphur in the proteid molecule.

This completes the general survey of our problem. The next step is to pass in review the remedial measures advocated, our object being to select those which will not only destroy bacteria, but will also act chemically

upon these products, converting them into non-infectious and non-toxic compounds.

According to the effects produced upon albumin, the contra agents may be placed in two classes, i.e., coagulants and non-coagulants. In the former are included salts of the metals and alcohols, and in the latter many of the essential oils.

The mineral acids and the alkalies act chemically by destroying the albumin.

The metallic salts which have been employed or tested in canals are the chlorides of zinc and aluminum, and the bichlorides of mercury, gold and sodium, sulphate of copper, and nitrate of silver.

The salts of copper, silver, and gold, are contra-indicated, owing to the resultant discoloration, and mercuric chloride is open to the same objection; thus the only metallic salt apparently having general application is zinc chloride. The alcohols employed are ethylic (commercial), carbolic acid, creosote, with the coal-tar derivatives. The cresols and formalin may also be mentioned in this category.

Preparations of iodine, bromine and chlorine are all powerful antiseptics and disinfectants.

The essential oils recommended are those of thyme, cinnamon, cassia, myrtle and eucalyptus.

The alkalies employed as sterilizing agents are the alloy of potassium and sodium (Schreier's preparation), sodium carbonate, and sodium dioxide.

The mineral acids used are hydrochloric and sulphuric. The gases, oxygen and chlorine in the nascent state, when used as bleaching agents, accomplish sterilization concurrently. Oxygen is liberated from aqueous and ethereal solutions of hydrogen dioxide and sodium dioxide.

Iodol, iodoform, and kindred substances are not employed as germicides *per se*, but for supposed capability of maintaining sterilization

after the more powerful antiseptics have been used as germicides.

Aristol (dithymol biniodide) is another member of the group. It is theoretically preferable, as it contains twice the quantity of iodine in loose combination with its base of thymol. These substances are supposed to set free iodine, when in contact with albumin. Iodoform is not a germicide, but it appears to lessen or destroy the effects of toxic substances.

Zinc chloride, when brought in contact with albumin, forms a dense and colorless coagulum of zinc albuminate. Carbolic acid forms a less dense coagulum, and creosote still less.

Mercuric chloride and silver nitrate form complete coagula. Formalin affects both albumin and gelatine, readily and quickly converting them into tough coagula, which maintain their form and appear to be persistently antiseptic to certain varieties of micro-organism.

The essential oils act as antiseptics without coagulation, having markedly less germicidal action than the agents already mentioned. Placed in root-canals, they diffuse through the dentine, maintaining prolonged antiseptic influence and causing some discoloration of that tissue. Oil of thyme and cinnamon head the list, cloves and eucalyptus being far below them in antiseptic value. Oil of thyme is dependent upon its active principle, thymol, which has high therapeutic value, not only in pulp-canal sterilization, but of the infected pulp itself. It appears to possess the valuable property of destroying the infecting organisms without at the same time injuring the vitality of the cellular elements of the pulp tissue (Hartman and C. R6se have cited numerous cases of recuperation of badly-infected pulps under treatment by thymol applied in substance).

The alkalies employed as antiseptics saponify the fatty matters formed in the course of albuminous decomposition and dissolve albumin-

ous substances with which they are brought in contact. The first of these, the alloy of potassium and sodium (Schreier's preparation), when placed in contact with decomposing pulp tissue, abstracts the elements of water from it, and sodium and potassium hydroxides are formed which have the power of saponifying fats and dissolving albumins.

Sodium carbonate has similar properties, but it is less energetic in action.

Sodium dioxide, under the same conditions, forms sodium hydroxide, nascent oxygen being set free, which is germicidal and also decomposes coloring substances in dental tubes, acting as a bleaching agent.

The mineral acids serve a double office. Placed at the orifices of the canals they unite with and decompose the calcium salts of the dentine, and also serve as efficient germicides. Formalin is the proprietary name for a 40% aqueous solution of formaldehyde gas. It is a powerful diffusible antiseptic, having the property of tanning or hardening proteid substances, forming insoluble compounds which appear to possess persistent antiseptic properties. For rendering the contents of the dental tubuli sterile, fixed and unchangeable, it is fully equal to zinc chloride. For the treatment of infected dentine and periapical invasion, the diffusibility of the gas gives it a decided advantage over all other sterilizing agents.

The official solution of formaldehyde is too irritating for general use, however. The liquor formaldehyde can be diluted with phenol and creosote, but cresol is recommended, for the following reasons:—

It is miscible in all proportions, forming a food product from which formaldehyde gas is constantly generated. It is a more powerful disinfectant than phenol or creosote. Cresol possesses an anodyne property which modifies the irritant action of formal-

dehyde. It will not discolor tooth structure.

In this connection it may be stated that formaldehyde will unite with ammonia, producing urotropin, a solid. It also unites with hydrogen sulphide, forming methyl alcohol and sulphur.

Formalin is an ingredient in the Howe ammoniacal silver nitrate method of treatment. This solution is prepared by slowly adding strong ammonia to a saturated solution of silver nitrate until the resulting precipitate of silver oxide is dissolved in excess of ammonia. On the addition of formalin, metallic silver is thrown down in a finely divided state, the formic acid acting as a reducing agent. The silver can also be reduced by the addition of eugenol.

This chemical reaction is utilized for the sterilization of infected canals and dentine, the ammoniacal silver solution being first introduced and then reduced by the addition of formalin. The formic acid is highly irritating, and great care should be taken to add more silver solution after the first formalin reduction, and again reduce with eugenol.

Penetration is much greater into infected than non-infected dentine, as the albumin in sound dentine forms a surface silver albuminate which limits further penetration, whereas the silver solution readily diffuses along infected tubuli and, if followed by the formalin, the silver reduction occurs to the limit of penetration.

The disadvantages of this method are: The tendency of the silver solution to deteriorate, even when kept in the dark;

The irritating effect of the formic acid upon the periapical tissues;

The liability to staining of the tooth, and the query whether metallic silver, *per se*, has antiseptic value.

Before completing this section brief mention may be made of the method of mummification of the pulp by preservative pastes. Dr. Miller's experiments have demonstrated that none

but the most powerful and penetrating antiseptics have value as permanent sterilizers.

The technique advocated is to devitalize the pulp, when the crown portion and all readily accessible tissue is removed from the orifices of the canals; thereafter the mummifying paste is packed into the canal orifices and the pulp chamber. These pastes consist of the following ingredients: thymol, zinc oxide, glycerine; as constant factors: alum, paraform, cocaine hydrochloride, and formalin as optional.

Materials for Filling Root-Canals.

These materials are either in the condition of solids inserted *en masse* or in successive portions, or pastes applied alone or upon some medium which acts as a vehicle.

Another class is ordinarily solid, but is brought to a condition of fluidity before insertion. The properties which should be possessed are impermeability; the filling should seal the apical foramen hermetically, thus preventing effectually the egress of pathogenic organisms or their waste products to the tissues of the apical region and vice versa, and it should prevent transudation from the apical region and tissues, to the canals. It should remain unchanged by its environment, should be unirritating to the soft tissues and possess sufficient plasticity to permit of its ready adaptation to the walls of the canals. It should be at least aseptic when applied and preferably antiseptic.

The solid materials which have been employed are gold foil, shredded tin, gold, copper and lead points, carbon points saturated with creosote, wood points dipped in creosote, and partially carbonized cotton-wool.

The readily oxidizable metals have not found favor owing to their staining proclivities.

The plastic materials employed are softened gutta-percha cones and zinc oxychloride cement. The latter, and also other pastes, are frequently em-

ployed to fill the meshes of a wisp of crude cotton-wool or asbestos fibre, these latter being the vehicle. When cotton-fibre is kept in prolonged contact with zinc chloride, the cellulose undergoes a chemical change, being converted into a pectous substance called amyloid, which is a colorless colloid, unchangeable in the conditions existing at the apex of a canal.

Fluid substances employed are solutions of red gutta-percha base-plate in chloroform, called chloro-percha, which contains, in this case, vermillion. If made of white gutta-percha, chloro-percha contains zinc oxide and a variable amount of other mineral substances.

The other members of this class are salol and paraffin, which are made fluid by heat before insertion. Gold was the first material adopted for canal filling. Tin has the same virtues and objections as gold, i.e., difficulty of manipulation and impossibility of removal; both these materials, therefore, have a very limited application. The plastic materials which have been most recommended are the oxychloride of zinc and gutta-percha, and, of late, various pastes have come into favor, the ingredients comprising such agents as zinc oxide, cresol, formalin, zinc sulphate, eugenol, resin, eucalyptol, thymol, alum, paraform, hydronaphthol, kaolin, &c.

The Root-Canal Filling

Zinc oxychloride cement is capable of hermetically sealing the apex and remains unchanged. It is easily placed. Its antiseptic properties disappear after setting, but it remains aseptic. When freshly mixed it is very irritating to soft tissues; it is best, therefore, to place a barrier at the apex, either a minute cone of gutta-percha dipped in oil of eucalyptus or cajuput, or a tiny pellet of cotton dipped in a strong solution of thymol.

It is highly probable that when the freshly mixed oxychloride of zinc is placed over it, the cotton is converted

into amyloid which seals the apical foramen hermetically and permanently. The same change occurs in the cotton upon which the oxychloride is carried into position.

Gutta-percha is not so easily placed, and sealing of the apex is more uncertain. If the apical foramen is small, the canal walls may first be lubricated with one of the essential oils, eucalyptus, cinnamon or cajuput (solvents of gutta-percha), then the chloro-percha pump inserted up the canal and finally a gutta-percha cone. As an alternative to the gutta-percha cone, pieces of floss silk, or better still, thin copper wire dipped in chloro-percha and inserted into the canals, having the ends projecting into the pulp chamber, provide a ready means for removal of the filling should the necessity arise.

To measure the length of canals, place a small disc of rubber dam over a canal plugger, and carry the plugger point to the apex; the floor of the pulp chamber engages the rubber dam and marks off the exact length of the canal.

Salol and paraffin are both manipulated after one manner. A very fine probe is passed into the canal to its apex and left *in situ*, a portion of the material is then caught between the beaks of a pair of dressing pliers and held above an alcohol flame until it melts, when the closed beaks are placed in the canal beside the probe and opened. The fluid material runs into the canal and the probe is slowly withdrawn, when its place is occupied by the fluid. It is advisable, however, to assist the process with a warm broach. If salol only is employed, one should insert, in addition, a cone of gutta-percha, as the drug tends to become absorbed.

Salol in combination with paraffin has greater stability and is an effective antiseptic and non-irritating root filling.

The great advantage of the antiseptic paste method lies in the fact

that the sterilization and filling of the root-canal is one continuous process, instead of two or more separate and distinct operations. The formo-cresol treatment is looked upon askance by many as being irritating to the periapical tissue.

My own experience of this method has been a happy one, and it may be assumed that errors of judgment or technique are responsible for untoward results.

One would deprecate the use of cotton-wool as a vehicle to carry the fluid into the canal, in order to avoid pressure on the contents.

A better method is to carry the medium in the beaks of dressing pliers to the pulp chamber, and gently work

it into the canals by means of broaches, continuing the process until the cavity is full. This ensures intimate contact of the fluid with the canal walls and consequent sterilization of the contents of the dentinal tubuli. It then becomes an easy matter to carry the freshly mixed paste into the fluid contents of the canal through which it will diffuse readily with slight instrumentation.

Consequent dressings are easily effected, the paste being readily softened by the addition of more fluid and the process repeated. The root filling is completed by the insertion of a varnished gutta-percha cone into the canal fully charged with the paste.
—*Journal of the British Dental Association.*

Declaration of Principles of the American Society of Stomatologists

ADOPTED BY THE ORGANIZATION COMMITTEE OCTOBER 8TH, 1927, IN CONFORMITY WITH INTERNATIONAL STOMATOLOGICAL ASSOCIATION (A. S. L.)

1. Stomatology, which includes odontology (dentistry) is that branch of medical science that is devoted to the study and treatment, both medical and surgical, of the mouth in health and in disease.

2. We believe in a single standard of medical education for all who practice the healing art in any of its branches.

3. We believe that the medical school curriculum should include a course in stomatology, which should embrace oral pathology and diagnosis of oral lesions, and should be equal in quality to other medical specialties taught. By such instruction every graduate in medicine will acquire a knowledge of normal and abnormal conditions of the mouth, and hence will be able to prevent as well as assist in the cure of pathologic conditions in this region.

4. We believe that the advanced status of medico-dental science and the interest of public welfare no longer warrant the continued separation of the two professions, and that the merger of dentistry and medicine into one profession will be brought about most effectively by readjustment of the undergraduate and graduate medical curricula in such a manner that only those who have received special training, of a recognized standard, in a given specialty shall be entitled to the designation of "specialist."

5. We further believe that the protection of health demands that the public be educated to appreciate the necessity for co-operation with stomatologists (dentists) and physicians, (as very many diseases begin with infection in some part of the mouth) to prevent illness and to preserve health.

SOCIETIES

Dentist in Harness for Sixty-Two Years

Sixty-two years a practising dentist probably gives Dr. James A. Murray the honor of being the oldest in point of service in his profession in Ontario. He is now in his eighty-third year.

Clear of eye, steady of hand, active and well preserved, he is still a popular dentist with old and young alike. The suite of rooms on a corner of the main street here, which has served as his office for more than a quarter of a century now, serves for his home as well.

"I can't stand a boarding house, much rather batch it," he told "The Star", as he explained that Mrs. Murray was taken away some years ago. Of his family of four sons and two daughters but two remain. One of these, Fred Murray, is in business for himself in Canton, Ohio., and the other, Mrs. F. M. Mackenzie, lives in Akron.

"I don't do much now," he said with just a suggestion of regret, "just stay here and tend to business when it comes along, and read. I read a lot, often sit here till midnight. And I intend to carry on just as I have been doing as long as I can."

Doctor Murray—he uses that title as an honor acquired with the years and through popular usage—is one of the few remaining dentists in Ontario who had been practising more than three years when the Ontario College of Dental Surgeons was organized and, therefore, was accorded the diploma of the college on a merit basis.

"I learned the trade, perhaps one should say profession, right here in this town with Dr. J. W. Cottingham. I started with him on May 7, 1866, and I have been right here ever since. For about four years I was assistant to Dr. J. L. Harnden and then I was

manager for Patterson and Fenton until they moved to Oshawa when I bought out the business and since then I have carried on for myself."

He also had vivid recollections of the good old days of the "open vote" and of the hot times when T. M. Gibb and John Dryden were on the stump. He likes the present system of balloting much better. "In those days you went in and just told the clerk who you voted for giving the name—there were always agents around and nearly always a fight or two; timid folks stayed home."

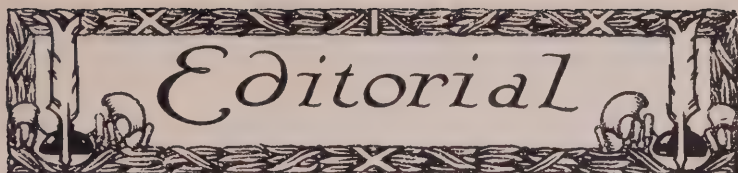
He is a man who has travelled a lot but of late years he has confined his travels pretty much to visits to his son and daughter in Ohio.

A number of interesting curios, including a case of stuffed birds, an Indian skinning knife, arrow heads, pipes and a stone which has literally grown or formed about a peach pit, rest in a rack in his suite.

Potted plants and flowers around the windows give a homey touch to the place and he has a wealth of books and periodicals with which to pass the time.

"There is only one dentist in Ontario that I know of that claims to be practising as long as I," he said. "He is 'Old Doc' Neelands of Lindsay. He says he has been practising longer than I have, but I doubt it very much."

His long and active life has not been free from troubles, but one is impressed with the fact in meeting Dr. Murray that these have operated not to embitterment but rather to that broader, deeper, finer understanding of life which makes for wisdom and endearment.



Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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TORONTO, OCTOBER, 1928

No. 10

The Supply and Demand for Dentists

It is the business of trade and commerce to keep supply and demand balanced. The tradesman looks out for his supplies and where there is a demand for goods. This balancing goes on so regularly and so unobserved that people forget that it exists and sometimes step in to regulate it to someone's advantage. While ever such regulation conforms to certain long established principles no harm comes.

The demand and supply of professional services for the public is based on the same principles as the demand and supply of food-stuffs. When wheat or pork is scarce farmers raise more of these commodities; when doctors are scarce more young men enter the doctoring professions. If there is a demand for dentists more enter the profession. Under normal conditions the public may be trusted to recognize the demands and keep the openings filled. The difficulty in this is that the requirements to practice have been regulated so that a sudden demand cannot be filled at once. It has been found by experience that in the interests of the public dentists must have certain qualifications, among these is a certain educational qualification which calls for many years of training and experience. This hinders a sudden demand from being filled.

The working out of the free operation of supply and demand is a very complex problem and has baffled the greatest minds of all times.

Just as soon as any cult or guild begins to control and regulate the portals of entry some other interest seems to be involved. The human mind has not yet settled all these social problems, not even the Bolsheviks.

Dentistry, like all other callings or occupations, has its ups and downs. Sometimes too few dentists and sometimes too many. It is hard to think of all the factors which enter into too many or too few dentists. Within the memory of the writer there have been many ups and downs in supply and demand in Ontario. The main factors seem to be: (1) the increased number of people who want dental services; (2) the social status of those practicing the calling; (3) the possibility of making a competence for the dentist and those dependent upon him; (4) the time and cost of the preparation; (5) the entrance requirements (perhaps one of the chief factors); (6) the state of the commercial world (good times reduces the numbers in the professional callings); (7) the attractiveness of other callings in University departments; (8) the opinion of those who are in dental practice; (9) the extent to which educated people recommend dentistry to the eligible youth; (10) the number of friends young men have in dentistry.

The chief barriers are: Cost, time, entrance requirement, detractors and goodtimes.

Whatever factors have operated in the profession for the past forty or fifty years in Ontario it can be said that the public rarely went begging for dentistry because of the scarcity of dentists. Just at the present time there are fewer students entering dentistry than for thirty or more years. This is as it should be, following the large number of recent graduates, but the trouble is it has gone too far. It will rectify itself if supply and demand are allowed to take their course. There should be no limitation on the number who wish to enter dentistry nor should there be any unusual inducements offered. For many years there have been very special inducements offered candidates to enter dentistry in England but still the supply is below the demand because when compared with other callings it is less attractive. When a young man finds that he can enter medicine with the same requirement as dentistry and can graduate with a B.Sc. Med. in two years less and graduate in both science and medicine in one year more he is liable to choose medicine. It suits his fancy more to be a graduate in science and medicine than in dentistry.

Withal, we wonder what have been the active factors which have reduced the dental attendance far below the local requirement to replace the loss from death and retirement. Our guess is that there ought to be ninety names added to the register in Ontario to make up the loss and the increased demand for dentistry. The Secretary of the Board has the figures no doubt.

Notes

In this issue we publish three papers on the root canal problem by three authors very widely separated by distance and views. Each presents a different aspect of the subject, all very instructive and pertinent.

New York college of dentistry is providing a course for dentists almost identical with that of medicine for the first two years. Much time is spent in the technique of prosthetic dentistry while few dentists do such work after they graduate. It is this very fact that has made the American dentist think little of the skill of the English dentist.

Mr. Eastman of Rochester, N.Y., has provided £200,000 to establish a dental clinic to treat the teeth of the children of London. It is also expected to establish a dental school for women. A children's dental and a women's dental college go well together. Can no rich man be found in Canada to establish such clinics?

Prinz in the July Cosmos gives the order of the frequency of the causative factors of leukoplakia as follows:

Tobacco, bad teeth, poor dentistry, heat, alcohol, tannic acid, condiments, and spices.

Copper amalgam fillings are said to be a cause of leukoplakia. The evidence given by Prinz is not very convincing, a patient had two copper amalgam fillings opposite to which occurred a leukoplakia. The amalgam fillings were removed. The leukoplakia disappeared therefore the copper amalgam was the cause of the disease. It may have been the roughness of the fillings which caused the disease and not the irritation from the

liberated mercury from the amalgam.

Dr. C. B. Penrose of the clinical staff of the Dentists' Supply Co. of New York city has been conducting clinics of several days' duration in the various centres in Western Canada. The course is based on the methods brought by Dr. Gysi, and the dental profession and follows his technic of full denture construction. Dr. Penrose has received good attention and deserves special mention as a good clinician of extremely modest demeanour, but able to deliver the goods.

The terrors of the dental chair were recently depicted in a Windsor paper in the form of a conversation between a dentist and a reporter. The reporter used choice English in the supposed interview while the dentist used slang, bad grammar and vulgar expressions. How did the reporter get the idea that dentists do not use good English.

Doctor W. Carson has spent most of the summer in caring for the teeth of people who live in the remote districts of Northern Ontario.

Dr. P. Hill has begun practise in Kirkland Lake.

A dental committee has investigated the free or partially free dental service in New York City, and found the service inadequate. Of the 152 clinics only seven give complete dental service. There are 492 chairs running sixteen hours a week, while they might run thirty-five to forty hours without any additional cost for equipment.

Niagara Falls, Ont., Sept. 28, 1928
Dear Dr. Webster:

I would appreciate very much your opinion regarding the following case:

The patient, a little girl not yet quite eight years of age, has very extensive caries in three of the four six year molars, one being so far gone that the nerve is more or less exposed. I have advised extraction of all four molars hoping that the occlusion will later correct itself. What in your opinion would be the proper course to take?

Thanking you sincerely,

I am yours very truly.

Answer—It is advisable to extract all four first molars when the bite can be kept normally open either with the deciduous molars or the bicuspid and one or more lower first molars are to be lost or one lower and one upper on opposite sides. So if the bite can be kept open then extract all four teeth as necessity demands before the eruption of the second molars.

September 27, 1928.

Dr. A. E. Webster:

Dear Doctor Webster:

A case has just been referred to me upon which I should like to have your opinion as regards possible treatment.

Young girl, four years old, born in India, and but one month out from Perth, Scotland. All teeth decayed to gum line except lower six anteriors, which appear to be quite normal. Gums are much swollen from abscess condition which seems to be general. In uppers pus can be traced from molar on one side to that on other, and has pointed in five places. General swelling of face, which at times becomes acute with distressing pain. This condition has been prevalent for some two months, and dentist in Scotland said he could do nothing, since extraction would mean loss of masticating powers,

with consequent ill health. I feel however that the child is suffering just as much from the ingestion of pus which must necessarily accompany each bolus of food. She does nevertheless, appear to be quite robust and bright. Appetite good, and food consists mainly of milk, soups, and soft foods lately.

Father and mother are both healthy, as also are the two other children of the family; one nine years old, and the other but sixteen months, teeth good.

I would be very much pleased indeed, if I have given you a clear enough account of the case, and you should express a possible treatment, and prognosis.

Thanking you in anticipation, I am—

Sincerely yours,

Answer—Notwithstanding the present apparent good health of the child we unhesitatingly recommend the removal of every infected area in the mouth even though this should involve the removal of all the molar teeth. A break down may occur at any time in such cases.

Question—Would you kindly tell me, would I be liable for the following: A while ago I went to see a dentist for an estimation. He told me how much and I agreed. So he took an impression of three teeth and I never went back since. All this by word of mouth. I did not sign any papers or make any deposit. Now this man has sent me two letters demanding \$25.00 for work he certainly has not done. Can he collect?

Answer—The dentist did certain work for you and I think you are under obligation to pay him what is fair for this work. As to whether \$25.00 is fair or not is a matter of evidence, but I think you should see him and see if you cannot come to some satisfactory settlement.

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Medico-Dental Building

Announcement is made that on August 1 work will be started on the Medico-Dental building, an 18-storey structure at the north-east corner of Dunsmuir and Howe streets, planned especially to meet the demands of the medical and dental profession of Vancouver. The location is strategic as it is in the heart of the city's shopping and hotel district and the site received the immediate approval of Strauss & Co., one of the foremost real estate financing firms of the continent.

The plans of the building have been prepared by Mr. John A. Creutzer, who is a specialist in this type of building, having already planned and supervised the erection of three buildings of the character. In the plans for the Vancouver Medico-Dental building Mr. Creutzer has taken advantage of the latest provision as to planning and service, as now being carried out in the largest cities of the continent.

The building will be located on a site 120 by 125 feet and be of reinforced concrete construction. The first two stories will be faced with native white stone and the upper stories with a local golden color plastic brick and white stone trimming of Gothic detail. A 250-car ramp garage is planned as part of the building.

The equipment of the structure will be complete in every detail and of a highly specialized nature to suit the demands of the professions. Four high-speed passenger elevators of the most modern type and with extra wide doors will be provided. Ventilating equipment of the most complete character assures constant circulation of pure air in every office. The special demands of physicians and dentists will be met by the making of provision for power, gas, compressed air and hot and cold water in every suite.

Mr. Creutzer, the architect for the

building, who is now in the city, says that the building will be completed by May 1 of next year and that it will be a model among buildings on the continent serving the demands of the medical and dental professions.

A. E. Austin & Co. are agents for the building company.

THE TORONTO DENTAL ASSISTANTS' ASSOCIATION

Public Notice Is Hereby Given that under the provisions of the Companies' Act Letters Patent bearing date the 11th day of June, A.D., 1928, have been issued, in the terms and conditions and subject to limitations and restrictions, if any, therein set forth, constituting Alta Alexander Ethelynd Aitken, Florence Gertrude Whitehead, Betty Hagan, Evelyn White and Marion Edwards, all of the City of Toronto, in the County of York and Province of Ontario, Dental Nurses; and any others who have become subscribers to the memorandum of agreement of the Corporation, and persons who thereafter become members thereof, a corporation without share capital under the name of The Toronto Dental Assistants' Association, for the following purposes and objects, that is to say: To promote unity and good fellowship among the dental assistants of the said City of Toronto and to advance the interests of the profession of dental nursing; with its Head Office at the said City of Toronto; and its First Directors being Alta Alexander Ethelynd Aitken, Florence Gertrude Whitehead, Betty Hagan, Evelyn White and Marion Edwards, hereinbefore mentioned.

—W. W. DENISON,
Acting Assistant Provincial Secretary.



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GRADUATES TO ENGAGE IN DENTISTRY RESEARCH

Seven graduates in dentistry have applied for registration in the University of Toronto for research proceeding to the degree of Bachelor of Science in Dentistry. This degree was awarded for the first time at the last University Convocation, the major requirement being that of research. Four of these graduates are from other universities, as follows:

Alan C. R. McLeod, D.D.S., University of Pennsylvania.

Frederick H. Wirth, D.D.S., Tulane University.

Walter H. Godsoe, D.D.S., Dalhousie University.

A. Borden Haverstock, D.D.S., Dalhousie University.

"The first meeting of the Executive of the Montreal Dental Assistants' Association took place in Dr. G. Franklin's office, Medical Dental Bldg., on Wednesday, September 19, 1928. Miss E. Moye, first Vice President was appointed acting President until the next general elections.

The opening meeting of the season will take place on October 15th, 1928."

Yours truly,

RACHEL RAHNER,

Chairman Publicity.

208 Medical Dental Bldg.

There is an increase, in every year in the faculty of dentistry of McGill University.

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DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

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Editor, A. E. WEBSTER, D.D.S., M.D.S., M.D.

Honorary Dean Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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Dominion Dental Journal

Vol. XL

TORONTO, NOVEMBER, 1928

No. 11

ORIGINAL COMMUNICATIONS

The Fundamental Principles of Prosthesis

IRVIN H. ANTE, L.D.S., D.D.S., PROFESSOR, CROWN AND BRIDGE PROSTHESIS.
UNIVERSITY OF TORONTO

Read at the fifth anniversary of the establishment of the Dental Faculty of the
University of Montreal.

There is no work in dentistry that gives more satisfaction, both to the operator and the patient, than the restoration to health and beauty of a natural denture by a properly designed, constructed, and accurately placed artificial restoration.

Most of the present day forms of artificial work and methods of construction are adequate, but the only value of any method lies mainly in its range of application, and it is largely the operator's limited knowledge of their possibilities or application, or over-enthusiasm and faulty technique, that doom them to failure.

We must recognize the fact that the trouble is often the lack of correct fundamental principles, and every operator must be willing to make sacrifice of time and money for research and technical study that he may perfect himself in those things in which he knows he is unskilled.

The reasons for failure are:

Faulty, and in many cases unattempted, diagnosis and prognosis, including design, construction, insertion, maintenance and repair.

The attempt to connect rigidly together too many teeth.

Failure to remove foci of infection, and inattention to treatment and care of the investing tissues and mouth sanitation.

Disregard for tooth form.

Insufficient saddle area in free end restoration.

Absence of proximal and interproximal spaces.

Uneven distribution of retention and stress.

Absence of proper embrasures.

Faulty occlusion and articulation.

Why should we insert an artificial restoration?

For restoration of structures, teeth and associate parts.

For restoration of function of digestion, speech, expression, mastication, insalivation, deglutition.

For prevention of further injury as result of extraction by the insertion of good appliances to prevent drifting, exfoliation, excessive stress, excessive wear and stagnation.

General indications for fixed bridges. Space of two teeth or less having an abutment tooth at each end of the space with non-vital, or carious, filled or inlaid teeth, or teeth of faulty enamel, at either one or both ends of the space. Also spaces of two teeth or less with unbroken enamel. The bridge to be capable of hygienic maintenance.

General indications for removable interlocking bridgework employing precision attachments. Same as above except hygienic maintenance not possible, extensive alveolar absorption and without probability of patient swallowing piece.

General indications for removable bridgework using clasps. Spaces of three teeth or less, having an abutment tooth at each end of space, with bell-shaped teeth of unbroken enamel, or with small metallic fillings or inlays, without danger of patient swallowing piece. No predisposition to caries must exist. A patient that will appreciate this form of work and give it the necessary attention to maintain tooth preservation.

As a basis of construction and maintenance a definite routine should be followed out to determine the factors which go to make up a correct restoration, e.g.

1. Surgical diagnosis to determine the procedure necessary to maintain health.

2. Technical diagnosis. Every scientific factor should be considered to determine the procedure necessary to proper design and construction of abutments, dummies, attachments, saddles and artificial teeth in order to prevent trauma, gingival irritation and needless sacrifice of tooth tissue.

3. Physiological essentials are the interplay of the surgical and technical essentials in order to maintain health of the supporting and underlying tissues.

4. Execution of work in an artistic and skilful manner to produce aesthetic results.

5. Proper insertion and maintenance.

It is required to put the oral cavity in a state of health. For this purpose I believe it is necessary to have radiograms sufficient in number to show every tooth, crown, roots and investing tissues; full upper and lower study models, a chart showing cavities, faulty fillings and contacts, mobility of every tooth, and any abnormal condition of the soft tissues which would not be plainly shown by radiograms or study models.

Applied to oral restoration, surgery calls for the extraction of *all teeth* and *roots* that are *unfit for further service*, or are a *menace to the health of the patient*.

The physiological essentials are:

- (1) That the number of teeth present have sufficient strength to withstand the stress to which they will be subjected.

- (2) Firmness in the teeth, for if they are not standing firmly it is not reasonable to expect they will be able to carry additional stress.

- (3) A sufficiently low stress of occlusion upon the restoration, depending upon the type of abutments, dummies, and saddles for each case.

- (4) That the teeth which are to occlude with the restoration are properly ground before constructing the restoration, if necessary. It should be our aim to keep the occlusal plane as nearly normal as possible, so as to maintain full efficiency in mastication.

- (5) That the abutments seat properly after construction of restoration. When inlays, three-quarter crowns or clasps, are to be employed as abutments, it is wise to carve or outline our preparations on the study models,

which allows us to plan our attachments or preparation and compensate for mal-position and mal-alignment; also, if space between abutment teeth is too narrow for normal size teeth, we can plan our restoration so as to produce a more aesthetic and harmonious effect.

(6) That the length and thickness of the root and the amount of bony attachment will safely withstand the stress to be applied. A non-vital root, if in a healthy condition, is considered just as good an abutment as a vital root from the standpoint of stress to be carried.

(7) That the periodontal attachment of the abutment teeth should be thin and dense and covering the entire surface of the root; the gum tissue firm and pink in colour. If the abutment is a *vital tooth*, a *receded pulp* is the more favourable. Young patients under the age of 15 should never have vital teeth cut into for the purpose of inserting bridge work.

If teeth are to be extracted it is determined at this time whether we shall restore them immediately or wait for absorption or shrinkage. For immediate insertion the over-glazed porcelain root properly placed, with favourable conditions in cases of one tooth out, is favoured. For partial absorption the porcelain tip pontics and the hygienic bridge should be employed. Partial dentures should wait on a reasonable amount of absorption, from four to six weeks in the average case. The porcelain ridge lap pontic and the removable bridge should wait on almost complete absorption from three to four months.

Up to this point the mouth has been prepared preliminary to the actual work of constructing the restoration. The teeth and the investing tissues are now in a state of health and we have decided definitely upon our form of restoration, be it fixed bridge, removable bridge, partial denture, or a combination of these forms.

(8) When the bridge is to be of a

fixed, removable or partial denture type that *foundational resistance* shall be greater than *occlusal stress*. Clinical experience has proven that one tooth will support one missing neighbour of similar functional activities and of equal or lesser pericemental area than itself, providing it is not a free end restoration.

(9) That under normal conditions the *space shall be short*, confined usually to *one or two teeth* missing for fixed bridge, and never more than three teeth out in series for removable bridges, unless the occlusion is such as not to exert any strain upon the bridge, or opposing the bridge is an artificial denture.

(10) That teeth employed as abutments for a restoration shall include only teeth of *similar functional activity*; that is, posterior restorations shall be retained by posterior teeth only and the cuspid and anterior restorations by anterior teeth only and the cuspid, but other teeth may be employed as supporting abutments.

The physiological movement of the posterior teeth is in a different direction to that of the anterior, and a fixing or building of these teeth together would bring about an interference with their movements, resulting in impaired function of teeth and tissues.

(11) Correct alignment of restoration. A straight alignment is the most favourable, keeping away from a curved alignment or arc of a circle.

(12) A minimum amount of leverage. A pontic should never be swung from one abutment except when the upper lateral incision is restored and the cuspid employed for the retaining abutment.

ABUTMENTS

An abutment is a supporting structure at the end of a bridge or partial denture. Applied to dental prostheses there are two classes of abutments—*retaining* abutments and *supporting* abutments.

A retaining abutment retains the bridge or attachment in place as well

as supports it, while a supporting abutment supports the bridge but does not retain it.

Abutments are contra-indicated on; a loose tooth, one badly tilted, one with periclasia, a granuloma at its apex, infective condensing osteitis, fistula, resected root, or fractured root.

The different teeth to resist stress when employed as abutments are placed in order according to their pericemental area—first molars, second molars, cuspids, bicuspid and upper centrals. The lower incisors, upper laterals, and third molars should never be employed as retaining abutments unless you have no alternative.

In fixed bridges the combined pericemental area of the abutment teeth should be equal to or greater in pericemental area than the tooth or teeth to be replaced.

In removable bridges or partial denture the combined pericemental area of the abutment teeth plus the mucosa area of the saddle should be equal to or greater than the pericemental area of the missing teeth.

There should never be more than two retaining abutments united together to form a bridge unless the teeth perform similar functions.

When supplying one dummy with a fixed bridge involving the bicuspid and molars, absolute fixation at one end only and a strong recessed rest in the supporting abutment piece upon the other end will usually prove adequate in so far as stability is concerned, and advantageous to both abutment teeth by permitting them to function more or less independently of each other. The retaining abutment should be on the stronger of the two teeth. The occlusal rest should extend well into the occlusal surface of the supporting abutment to prevent tipping or be interlocking to give stability to the restoration.

When restoring the upper or lower central incisor or two or more teeth

out in series, retaining abutments should be employed at both ends of the space.

If a dummy is retained at one end only as supplying lateral incisor, if the other end is supported by a rest on the enamel of adjacent tooth, the rest should be constructed of half round gold elastic wire and rest upon the supporting tooth with point or line contact, but never surface contact.

A rest in an inlay in an anterior bridge should be half round, and for a posterior bridge it should be half round or an inlay with a half round surface resting within an inlay and of an interlocking or dovetail type and inserted along the centre line of occlusion.

All cutting on a vital tooth should be broad, long and shallow, rather than deep and narrow. The real retentive feature of an abutment is found in the tensio-frictional resistance to displacement with correct adaptation of a hard material against opposing and nearly parallel axial walls and the longer and broader those walls the greater the resistance to displacement. At the same time, the further those walls are kept from the pulp the less will be the irritation to that pulp. Also, the use of one or two interdental pins will obviate the loss of considerable tooth structure and increase the frictional resistance.

A great number of the abutment teeth fail because an exact duplicate of the gingival contour of the enamel normally covered by the free gum margin is not reproduced, thereby permitting food to be forced against the gum margin instead of passing over. If the occlusal surfaces of the molars and bicuspid and the lingual surfaces of the centrals, laterals, and cuspids are not accurately reproduced, food will be forced between the teeth and into the interproximal spaces, causing gingival irritation.

We have tried to develop something the average dentist can construct, and I wish to emphasize the point that if

an attempt is made to cut a shoulder at the gingival border, or a finished line, there will be a very small percentage which will be adapted properly to that shoulder or finishing line. The novice should not attempt preparation with finishing shoulders.

THE CONSTRUCTION OF PONTICS OR DUMMIES

The pontic, or dummy, as it is frequently called, is that portion of a dental bridge that supplies the missing natural tooth or teeth.

The matter of cleanliness in fixed bridgework is largely dependent upon the shape of the pontics, the manner in which they are fitted to the soft tissues, and the manner in which they are attached to the abutments, together, of course, with the care the patient gives the appliance. Unfortunately, many fixed bridges are positively filthy. This may or may not be the patient's fault; in many cases it is ignorance or negligence on the part of the patient. In other cases it is due to faulty design or poor construction, so that no matter what attempt the patient may make to keep the bridge clean it remains in an unsanitary condition.

We should not construct any form of restoration which allows gold to come in fixed contact with the epithelial tissues, for it is an established fact that gold does cause irritation when brought in contact with the soft tissues. Perhaps this class of bridgework constitutes the majority of all bridgework, and no doubt does a great deal more harm than good, but those of us who see the harmful results should only strive the more to do away with it.

The occlusal surface of a pontic should generally be the exact duplicate of the missing tooth or teeth which it replaces. The exact duplication of the occlusal surface of the natural tooth, however, is frequently not only impossible, but in some instances undesirable, even if possible. In many cases where fixed bridges are

indicated the abutment teeth have drifted to such an extent that the space between the abutments is much shorter than the space that was occupied by the natural teeth. In these cases it is impossible to duplicate exactly in the pontic the occlusal relationship that existed before the extraction of the teeth, and the best that can be done is an approximate reproduction.

The necessity of proper occlusion and articulation of the pontics is one thing to which every system of bridgework must bow down, for if the articulation is not well balanced in the lateral and forward thrusts of the mandible, certain teeth bear all the force, and if such teeth be a part of the bridge the result will be a serious disturbance in the supporting and investing tissues.

What is injurious to these tissues is that too often the cusps of the pontics are so formed that there is an actual locking with the cusps of the opposing teeth, in such a manner that the entire bridge is carried too far with the lateral movement of the mandible, which will eventually dislodge the abutment or cause a breaking down of the tissues supporting the abutments.

It is important that the marginal ridges be broken to act as waste gates for the food if the pontic is so constructed that normal interproximal spaces and embrasures are maintained the periodontal tissues will receive sufficient protection and stimulation during mastication with massage to keep them in a healthy condition. These "spillways" should be more pronounced in a pontic than in the restoration of the occlusal surface of a single tooth, as we wish to place the minimum load on the pontic that is consistent with a fair degree of efficiency in mastication.

The gold part of pontics, even two or three together, should be cast in one piece. We not only can secure a more accurate reproduction of the

natural tooth, but the only solder used is in uniting to the abutments. This solder point should be circular in form and cover as small an area as possible, consistent with strength and service, the contact point being its centre, and should occupy only the occlusal third of the interproximal space. Never should the solder extend from the pontic to the margin of the casting, as this would make it impossible to finish the margin of the casting after it is seated in the cavity. The cavity should be extended further for the abutment on the angles of the tooth than for an ordinary inlay, thus producing an area more easily kept clean, and the excursion of food in mastication would naturally clean the surface of the inlay.

The length of a bridge is definitely determined; it cannot be reduced; but the bucco-lingual diameter can, and should be, reduced to avoid placing *too much strain* on the supporting teeth. The wider this diameter of dummies the more pressure is placed on the supporting teeth; the smaller this diameter the less strain on the supporting teeth.

The occlusal surface of a bridge should never be greater than 90% of the combined occlusal surfaces of one tooth, 80% for two teeth and 70% for three teeth which it is replacing, although I do not believe that up to certain limits the bucco-lingual dimension of the pontic will have any marked effect either upon the stress carried or upon masticatory efficiency.

Art in bridgework is that which conceals artificiality. The time is past when any shape or mould of porcelain tooth in the anterior part of the mouth would satisfy the patient. Fortunately there are on the market today tooth forms and shades that, if used skilfully, defy detection by the laity at conversational distance. It is somewhat difficult to make general statements in regard to the meeting of aesthetic demands in the construction of pontics, because there are

such wide variations in individual cases. There are a few pitfalls, however, that may usually be avoided. In general, a single wide facing is preferable to two very small ones. That is, teeth that are smaller, or rather that are narrower, than the remaining natural teeth, are more conspicuous than those slightly wider, just as shades slightly darker are less conspicuous than those lighter than the natural teeth. In arranging anterior facings a slight irregularity of alignment will often prevent the hideous appearance that comes from setting facings in perfect anatomical position. With the large number of moulds and sizes of crowns and facings on the market, it should seldom be necessary to grind the lateral sides. This destroys the form of the tooth and often produces a most artificial appearance that is accentuated by the lack of normally shaped inter-proximal spaces.

Patients expect service, and this is the type of bridgework that should give service, and it is our duty to see our patients at frequent intervals until satisfied that the occlusion is perfect and the bridge is functioning properly, and all occluding surfaces tested with articulating paper for riding points that increase the strain. It is our duty to teach the patients how to clean bridgework, and even though we feel that the restorations we make will offer every assurance of favourable performance, our duty does not cease until we have instructed the patient as to the absolute necessity of observing sanitation. If we are to render the proper service we must see our patients and bridges often.

Beware of the dental saviours who are always presenting something new or making changes.

A change is good when a change is necessary, but no good for the sake of changing.

People who advocate a change and offer nothing better are a nuisance to the dentist and a menace to the public.

To remove infection by extracting an infected tooth, and to replace this lost organ with an artificial one that is non-irritating to the pulp of the abutment teeth, does not produce trauma or gingival irritation and is conducive to a state of health of the underlying tissues, is a real service to that patient.

All of these principles must be applied to the temperament of the

patient. Then, if no mistakes have been made in the design or construction of the case, and no mistakes on the part of the patient in using the restorations, only then will a restoration be perfect. This will give us a satisfied patient, and hence ample recompense, both tending to satisfy ourselves of work well done, and what more could one desire as an earthly reward for a personal service to humanity.

Relation of *Bacillus Acidophilus* to Dental Caries

BY RUSSELL W. BUNTING, D.D.S., GAIL NICKERSON, M.S., DOROTHY G. HARD, D.D.S., AND MARY CROWLEY, A.B.

"1. In a survey of 1335 children, it was found that the presence or absence of *B. Acidophilus* in the mouth is directly and definitely related to the activity of dental caries.

"2. In repeated examinations, a spontaneous cessation of caries was noted coincident with the disappearance of *B. Acidophilus* from the mouth.

"3. Certain cases in which *B. Acidophilus* was found to be present in mouths apparently free from dental caries at a later examination had developed new lesions of active caries.

"4. The presence or absence of *B.*

Acidophilus in the mouth constitutes a more accurate means of diagnosing the activity of dental caries than any clinical estimation can afford.

"5. It was noted that the degree of activity of *B. Acidophilus* and dental caries in the mouth was distinctly related to the type of diet and the form of dental attention which was afforded."

At the present time it is impossible for the average dentist to determine the *B. Acidophilus* content of the mouth, since skilled laboratory workers are required.—*The Journal of the American Dental Association*, July, 1928.

The Choice of Methods of Devitalizing Dental Pulp and the Local and General Consequences of Such Practices

A. E. WEBSTER, D.D.S., M.D., F.A.C.D.

Delivered at the 25th anniversary of the establishment of the Dental Faculty in the University of Montreal.

The subject of my address indicates at once that such operations are not wholly obsolete. However, there are those who would remove every tooth with a non-vital pulp and go so far as to remove every tooth with a diseased or pathological pulp or every tooth with an exposed pulp. Such practises are gaining ground with those who enjoy being different from the general herd and those who have had infections following root operations, yes and those who never knew how to manage teeth with non-vital pulps and those who have got tired of the tedious work of root canal therapy. It is much simpler to remove a tooth than to devitalize its pulp and treat the root and tissues beyond.

If all teeth with non-vital pulps are to be extracted, then one of the chief reasons for extending the length of the dental course has been lost. There is no need for a dentist to know anything about physiology, pathology or general medicine. He could practise as he did before William Hunter made his observations on American dentistry in this city now almost twenty years ago. He could pull teeth, plug holes and boil rubber, be a surgeon dentist or a glorified mechanic. The Simon Pure one hundred per cent. extractionist is not well balanced. He has not settled himself down to take all the factors into consideration; he does not always have practised upon himself, what he recommends to others.

There are good reasons for teach-

ing methods of devitalization of dental pulps and for teaching the subjects which are fundamental to medicine and surgery. It is beyond argument that natural teeth are more desirable than none at all, or artificial ones. It is also beyond argument that natural teeth with non-vital pulps when properly treated are more desirable than none at all or artificial ones. Based upon these premises we go on teaching and practising the devitalization of dental pulps to the end that we may serve our patients best.

We believe there is but one reason for devitalizing a dental pulp—pathology—all other reasons have passed away.

Before a pulp is devitalized there must be a diagnosis made as to its pathological state so that a proper selection of method can be made. In addition to the pathological state of the pulp the location of the tooth and its anatomical form become important factors in the choice of method. There are two general methods in common use, chemicals or drugs and anaesthetics. Chemicals such as arsenic or cobalt are used on multi rooted teeth in the posterior part of the mouth, while anaesthetics are used in single rooted teeth easy of access. The pathological condition of the pulp helps to determine the manner of using the poison or the anaesthetic. Pulps are devitalized to avoid future pain or infection. Any form of operation which does not do this fails in its purpose.

Therefore, a pulp must be removed without present or subsequent pain or infection. So pulps which are painful must be relieved and any possibility of present or subsequent infection avoided. Since practically all pulps which have to be devitalized are infected, such infection must be destroyed before the removal of the pulp is undertaken or the tissues at the apex may be involved. So it is good practise then to incorporate an anodyne and a disinfectant along with the arsenical application or at any rate before the removal of the devitalized pulp.

A few years ago current dental writings were overloaded with descriptions of granulomas, their diagnosis and treatment. About that time several writers on dentistry said that most granulomas could be traced back to the use of arsenic as a devitalizing agent. It wasn't long until this reckless statement was disproven by x-rays of many cases in which arsenic was used. There are dentists who proudly say that they have no arsenic in their offices. In fact, when they read about the causes of granulomas they dramatically went to the back window and hurled the stuff into the back yard. Of course they may have a little cobalt around or, perhaps Dr. Kellogg's paste, but no arsenic?? Arsenic is not a self-limiting poison and occasionally causes extensive destruction of both soft and hard tissues. It rarely goes through the adult apex to cause destruction but usually does so by oozing out of the cavity onto the gum. It is always wise to apply the arsenic to sound vital dentine and not to the exposure. Put cocaine and cloves on the exposure if there be one. If the pulp is fully vital and a young patient, use a small quantity, and for only 24 hours. If the patient is old, the pulp inflamed and not near the point of application, use a larger quantity and leave a longer time.

Arsenic, with all its faults, is an essential drug in the practise of den-

tistry. The trouble is, dentists will not make a diagnosis of the condition of the pulp and make the application based on the diagnosis.

If arsenic destroys the tissues beyond the dento-cemental junction in the canal, then there will likely be destruction of bone which will show as a rarefied area in an x-ray picture which would be diagnosed as a granuloma a few years ago. Such destroyed tissue is always a vulnerable point. It is liable to become infected with streptococci and may cause systemic symptoms.

Although the practise of anaesthetizing the dental pulp is quite modern, yet in one form or another it bids fair to displace both drugs and surgery. It is within the memory of many here present when dental pulps were devitalized only by surgery and arsenic. Low pressure anaesthesia of the dental pulp was introduced to dentistry by Dr. Funk of Chicago. This was shortly followed by high-pressure anaesthesia by Dr. Meyers of Cleveland. Then followed infiltration and trephining of the alveolus. As soon as block anaesthesia became general practise for the extraction of teeth it was used for pulp removal. General anaesthesia never came into general use for fine operations because of the disturbance of the patient and the great risk undertaken for a minor operation. Strangely enough, absorption anaesthesia has been little practised though it is effective in suitable cases.

Let me again announce the fact that only pathological pulps are devitalized and the choice of method depends upon the location of the tooth, its anatomic form and the stage of the disease of the pulp. Teeth with recently exposed pulps by traumatism may be completely anaesthetized by the local application of cocaine crystals to the exposure. The pulp may be removed within a few minutes with little danger of root canal infection. If the fracture is such as will permit low

pressure anaesthesia and the exposure has existed less than a few hours, pressure may be employed, but in most such cases infiltration is preferable. Accidental exposures in operating are best treated with absorption or low pressure anaesthesia. In cases of pain from infection or degenerating pulps, pressure anaesthesia is not indicated. In some rare cases of pulp exposure in which the operator does not wish to use infiltration, block anaesthesia or general anaesthesia low pressure may be followed by using crystals of cocaine moistened with pure phenol. The phenol is expected to disinfect the pulp.

Although low pressure anaesthesia has been in use many years, there is

still a notion in the minds of many dentists that its application is quite harmless. Locally, cocaine may destroy the tissues at the apex from drug intoxication, and generally it may cause the patient to have all the symptoms of cocaine poisoning. Cocaine is preferable to novocaine for pressure anaesthesia because it is so prompt in its action.

From the patients' viewpoint they would prefer pulp anaesthesia in this order, absorption, pressure, infiltration, block, general. From the point of view of the safety of the apical tissues, this order is to be preferred, absorption, infiltration, block, general, pressure, arsenic.

A Brief Review of Operative Procedures in Dentistry Considering Chiefly Treatment of Caries in its Early Stages by Cavity Preparation and Filling

L. F. KRUEGER, D.D.S., L.D.S., ASSOCIATE PROFESSOR OF OPERATIVE DENTISTRY,
UNIVERSITY OF TORONTO.

Read before the Academy of Dentistry, Hamilton, Ontario.

Undoubtedly a more conservative feeling has developed in recent years, and is now developing in Operative Dentistry, due perhaps to a better understanding of the primary causes of dental disease—(caries)—and observance of the more distressing local and general health problems that follow neglect, indifference, and careless treatment.

Dentistry as a health service bears greatest fruit:—

1st in Prevention.

2nd in early recognition of dental disease, careful scientific treatment and periodic examination, suited to

the particular individual's needs.

A dental programme might well commence with the eruption of the first tooth, and should certainly be systematically undertaken at the time the temporary teeth are in place, determining what factors will likely need to be contended with, and drawing up of a life's dental plan. Happily, Dentists, generally have become teachers in the general care of the mouth—the relation of dental deficiency and dental disease to the comfort and health of the individual. It is gratifying to observe the whole-hearted support of parents as regards the dental and

health welfare of their children.

With early recognition, skillful treatment, a commonsense health and mouth programme, with support from parents and teachers this coming generation will require smaller fillings, and shorter bridges, less mutilation of teeth for heavy abutments, and extensive restorative appliances.

The practitioner should have less need for, and worry over root canal therapy and surgery and complications that sooner or later may arise, through the loss of a tooth or teeth.

It is quite generally understood that dental caries is due to the affinity of lactic acid for calcium, this acid more or less concentrated, protected and undisturbed at some location on the tooth dissolves the lime salts, disintegrating the enamel structure resulting in a cavity.

Treatment of caries by cavity preparation and filling is at this time still the outstanding problem of the general practitioner.

Personal care, prophylaxis, a well fortified diet, a general common sense health programme, a simple system of notification for periodical examination, are constructive factors in the prevention and treatment of caries.

Dr. Bunting and associates work on the *Bacillus Acidophilus* in relation to caries, suggests a useful medical treatment or control in the use of metaphen and Hexylresorcinol. Dental Cosmos contains a full survey of their findings, a study of which should prove helpful.

The following are their conclusions in the October issue:—

1. Certain individuals have a distinct immunity to the growth of *B. acidophilus* in the mouth, which may persist from birth to old age, or may appear and disappear at intervals throughout life. During the periods of immunity large quantities of *B. acidophilus* may be ingested without that organism becoming implanted in the mouth.

2. By experimental feeding of a

well balanced diet from which sugar and candy were practically eliminated to a large number of children over a period of one year, it was found that they developed normally and were in good health and that the growth of *Bacillus Acepalphelus* in the mouths and dental caries were markedly reduced.

3. Hexylresorcinol (S. T. 37) when used as a mouth wash was found to be effective in the reduction of *B. acidophilus* in the oral fluid.

4. In a group of sixteen caries—susceptible children to whom metaphen treatments were given each month, over a period of one year, there occurred during that time a total number of seven cavities, of which three were recurrent.

5. The use of metaphen by the Dentist as a topical application to the teeth after oral prophylaxis and of Hexylresorcinol (S. T. 37) by the patient as a mouth wash are recommended for the treatment of caries.

Decay of teeth occurs quite definitely in the same locations, and in much the same manner, certain teeth and certain locations presenting more disturbance than others. The weakest and most susceptible locations being along developmental grooves in pits and fissures, where debris, food gather, and bacilli undisturbed and protected, warm and well nourished, cause destruction. Observation and statistics show, more cavities in these vulnerable locations, than on any other surfaces. Happily they are easy of access, and when small, present no difficulty in handling the enamel wall or margins, or in filling or finishing. In these cavities there is little excuse for not attaining perfection.

Dental statistics of the Metropolitan Life Insurance Co., show on examination of 2493 persons under 25 years of age, male and female, per 100 teeth had 597 cavities—34 lingual—65 buccal, 74 mesial—65 distal and 356 occlusal.

Dr. Hyatt from statistics available

to him, regarding buccal pits and fissures in permanent molars, finds the odds 2500 to 1, that these molars will be carious in twenty years or less, and feels justified, in view of the fact that only 1/20 of 1% of the people are free from caries. It is saner and safer to regard all fissured teeth imperfect and give them immediate attention.

This impresses one immensely, who having taken layer after layer of decay from molars, with sharp spoons, curretted right down to the pulp lining, clipped the horns of pulps, left decay, applied anodynes and antiseptics, capped and lined pulps, only to have a shell of tooth structure remaining difficult to restore, with a great probability of future pulp involvement and so on.

In so far as people can be taught these principles, and parents co-operate with the dentist, in formulating and following a sensible dental plan of early attention, frequent examination and good personal care, to that extent will the men and women of the future escape certain avoidable dental maladies and difficulties.

In addition to the usual manner of examination of teeth for cavities with explorer and mirror and very finest steel pathfinder, the radiogram, a new aid, reveals development of destruction heretofore undreamed of. In adult patients many require full mouth radiograms for other dental conditions, and in young patients the newer interproximal X-rays become at once a factor of greatest value in locating interproximal cavities, economically, quickly and without pain.

Examples in which area of penetration is seen in enamel:—

Decay spreading laterally along dento enamel junction.

Decay progressing more toward pulp-less along dento enamel junction.

In which area of penetration is not seen in enamel.

Perforation is small.

Proximal surface is flat-wide.

Horizontal angle of Rays not par-

allel in which enamel of two teeth overlapping.

Caries appear to progress much more rapidly in dentine than in enamel, much dentine may be destroyed before enamel destruction is apparent. From this it is evident that radiograms make possible early recognition—earlier attention, and less destruction.

Dr. Raper's book reveals many new meanings and applications. It seems to suggest that our efforts are best directed in preventing a tooth from ever aching, and what a happy situation for both patient and operator. The more frequent use of radiographs for examination of the proximal surfaces of the teeth, is an important aid in early recognition of caries.

Since many people through understanding and education will present themselves in the early stages of caries and subscribe to the general principles outlined, there will be opportunity for smaller restorations, and a more general use of filling materials best suited in these cavities.

All cavity preparations must embody those fundamentals such as full length enamel rods, resistance form to meet the stress of mastication, retention to hold the filling material securely in place, removal of all carious dentine, and bevel of the car-surface angle to suit the physical properties of the filling material selected.

The filling material should be selected according to the purpose it is to serve, for example a gentleman of years whose life span is almost spent is, no doubt, better served with copper amalgam in the cervical of molars, whereas a young lady with a long life expectancy requires the gold or porcelain inlay.

The filling materials in common use with any degree of stability or permanency are gold foil, amalgam, gold inlay, and porcelain inlay.

Those classed as temporary are the various cements including silicates,

copper amalgam and gutta percha.

The essential qualities of a filling material necessary for classification as permanent, requires that it be indestructible in the fluids of the mouth, has ability to withstand occlusion and attrition, and leak proof adaptability to the walls of the cavity.

Gold foil possesses in a greater degree these qualities than does any other material. It is particularly suited to all small and medium cavities, which can and should be prepared with a minimum of cutting; the placing and finishing taking but a short time. The essayist feels that the tendency of an operator will be to use more care and skill in making a cavity as small as conditions will justify when using foil. Whereas on the other hand, for inlay or amalgam preparation, certain cavities will be made deeper and larger than necessary. In lingual defects of upper anterior teeth in pits and fissures in bicuspid nothing equals foil. Small proximal cavities in anterior teeth can be so shaped and foil so contoured and finished as not to be conspicuous or objectionable. It is the colour property of gold displayed in its too liberal use for convenience that no doubt has placed it in the background in recent years rather than to any inconvenience or hardship to the patient or operator. Few really objected severely when fully appreciating its merits.

Permit me to suggest the use of more foil fillings, where all factors suggest their possibility of rendering the best service.

During exhibition time, conversation of the people ran in this ratio:—motor cars 51%—radio 32%, leaving only 18% for business, home, health, and dentistry. People to-day buy a radio for \$400.00, sometimes a little less, often a lot more, hundreds of them—just because it is a little better, its tone ranges, one octave lower and one octave higher than last year, and there is even then a lot more static than in a foil filling. It would

seem that anything that contributes to the disuse of foil lies within ourselves. Gold inlays make possible the finest type of restoration in the larger proximal and occlusal cavities, permitting the carving and contouring of the desired form in an easily workable material—wax—reproducing by the casting process this pattern in the quality of gold desired, fitting, finishing, burnishing, adjusting the contact, etc., with the advantage of securing almost any amount of insulation in the cementing process.

There are situations that cannot be met quite as nicely or economically with any other method as with the cast gold inlay.

It is in the distal surface of upper cuspids, and the distal surface of lower bicuspid where the inlay gives its best service.

High grade silver amalgam, properly manipulated and placed in a cavity properly prepared had really only its color and tendency to tooth discoloration as a negative factor. It has of course more strength in bulk, but with proper manipulation, serves splendidly in the smallest pits and fissures. Cavities prepared as for foil, except marginal bevel, and placed, as members of your study club prescribe, will satisfy the most critical.

Porcelain inlays rank second to none in tolerance by soft tissues—in shallow small cavities they must give way to foil. From the aesthetic standpoint no material equals it. For anterior approximal, and some angle restoration, good appearance, and splendid service may be depended on. Unfortunately only few operators possess the necessary equipment, using and relying instead on synthetic porcelain, for harmony in color, and while synthetic porcelain does serve a useful purpose in operative dentistry, its use would appear to be much overdone.

It would appear a large undertaking to present a better classification of

cavities, and suggestions for materials best suited in every case than the following by Dr. G. V. Black from the July issue of the *Journal of the American Dental Association*.

In form of fillings or restorations, two important forces of occlusion are to be considered, the proximal contact and the forces of the inclined plane—or forces of the occlusal surfaces, and these are closely related. Long teeth with high cusps have small proximal contacts. Teeth with short cusps have broad contacts, and as teeth are worn down and the cusps become shorter, changing the occlusal surface so also does the proximal contact wear, making it broader. Caries as well as loss of teeth affect the entire arch, restorations of any kind, require for best functioning that the proximal contact and occlusal surface be made in accordance with the age of the patient, copying the form and contact of the teeth in that denture.

Placing high cusps and small con-

tacts on short flat surface teeth, interferes with occlusion, increases stress on periodontal membrane, alveolar process and mandibular movement. Such change of environment is not apt to work out constructively. Biologically it is not reasonable to expect an experienced mandible accustomed to certain routine of 40 years or more to imitate and adapt itself to the capers of one of twenty.

Conclusions—There is necessity for thoroughness in the broad sense of cause and effect. This idea of thoroughness implies exercise of effort for prevention, the early recognition of dental disease, the treatment and repair in such a manner at such a time, and with such materials as will restore and maintain normal form and wear, prevent irritation to both hard and soft tissues from traumatic—chemical—bacterial and thermal agencies, extending the usefulness, comfort and longevity of hard and soft tissues of the mouth.

Progress in Operative Dentistry in Recent Years

BY ARTHUR D. BLACK, M.D., D.D.S.

The author deplors the increased use of silicate cements and advocates the use of gold foil in as many proximal cavities in the anterior teeth as possible. He urges that those who use silicates extensively give a history of the teeth in which this material is used, giving the age of the patient and the dates on which the fillings had to be renewed together with a record of the death of the pulps and the placing of porcelain jacket crowns.

A table is given which denotes the author's preference of material for the various types of cavities.

CLASSIFICATION OF CAVITIES

Bicuspsids and Molars

Small and medium-sized pit and fissure.

1. Gold foil.
2. Amalgam.
3. Gold inlay.

Large pit and fissure.

1. Gold inlay.
2. Amalgam, or porcelain inlay.

Small mesioclusal and some distocclusal of easy access.

1. Gold foil.
2. Gold inlay.
3. Amalgam.

Small distocclusal of difficult access and

large mesioclusal or distoclusal.

1. Gold inlay.
2. Amalgam.
3. Porcelain inlay.

Gingival third.

1. Gold foil.
2. Amalgam.
3. Gold inlay.

Incisors and Cuspids.

Small proximal.

1. Gold foil.

Large proximal.

1. Porcelain inlay.
2. Gold foil.

3. Gold inlay.

Proximo-incisal.

1. Porcelain inlay.
2. Gold inlay.
3. Gold foil.

Gingival third.

1. Porcelain inlay.
2. Gold foil.

Two things must always be taken into consideration — the age of the patient and the degree of susceptibility to caries.—*The Journal of the American Dental Association*, July, 1928.

Annual Course for Dental Practitioners

FACULTY OF DENTISTRY, UNIVERSITY OF TORONTO

The Annual Course for Dental Practitioners is to be held this year for one week, commencing Monday, December 17, 1928.

This Course is designed to meet the need of general practitioners who may desire to refresh their knowledge and become more familiar with the advances of recent years in important branches of dentistry.

GENERAL SESSIONS

All registrants are expected to attend the general sessions comprising 20 lectures as follows:

Clinical Dentistry and Diagnosis, 2 lectures; Dental Surgery and Anaesthesia, 5 lectures; Preventive Dentistry, 5 lectures; Orthodontia for the General Practitioner, 2 lectures; Dental Praxis, 3 lectures; Periodontia, 3 lectures.

GROUP SESSIONS

The class will be divided into groups for laboratory work, demonstrations and clinical practice as follows:

Group 1—Clinical Dentistry and Diagnosis—7 morning hours, 10 afternoon hours.

Group 2—Periodontia — 7 morning hours, 10 afternoon hours.

Mornings Only — Seven Hours Each Group.

Group 3—Operative Dentistry

Group 4—Dental Surgery and General Anaesthesia

Group 5—Full Denture Prosthesis

(Registrant may select only one of these groups).

Afternoons Only—Ten Hours Each Group

Group 6—Orthodontia for the General Practitioner

Group 7—Dental Surgery and Local Anaesthesia

Group 8—Crown and Bridge Prosthesis

Group 9—Partial Denture Prosthesis

(Registrant may select only one of these groups).

A brief outline of the work to be covered follows:

Crown and Bridge Prosthesis

Dr. I. H. Ante—This course will cover the following: reasons for failures; physiological essentials; surgical and technical diagnoses; choice of bridge work fixed or removable; design and construction of pin inlays, three quarter crowns, dowel crowns, cast crowns, shell crowns, porcelain pontics and wire clasps; casting and its difficulties.

Partial Denture Prosthesis

Dr. W. E. Cummer—Following a

brief reference to the Science of Partial Denture Service, the methods of practice, as demonstrated, will include design, construction (including impressions and articulation), installation, and maintenance and repair.

Dental Surgery and Anaesthesia

Drs. E. W. Paul, W. B. Amy and F. S. Jarman—Lectures on the subject of Anaesthesia (local and general) and Dental Surgery will be given, with numerous clinics where actual operations will be performed.

Full Denture Prosthesis

Dr. W. G. Switzer—In Full Denture Prosthesis instruction will be given on impressions, bite taking, setting up teeth and finishing. The course given will be essentially practical, the instructor carrying through to completion a full upper and lower case for a patient.

Operative Dentistry and Therapeutics

Dr. A. E. Webster and L. F. Krueger—The course in the Department of Operative Dentistry will especially cover the management and treatment of children's teeth, cavity preparation for inlays and attachments, and methods of determining how long a human denture will last and how to determine the relation of diseased teeth to certain general diseases.

Orthodontia

Drs. G. G. Hume, C. A. Corrigan and C. A. Kennedy—This course will be so planned as to be of special value to general practitioners in dentistry who may desire to undertake the treatment of some of the more simple cases in Orthodontia. These will be discussed both from the standpoint of diagnosis and treatment. There will also be given a short laboratory course covering the materials to be used in technique and the construction of appliances. Selected cases from practice will also be shown.

Periodontia

Drs. Harold K. Box, W. G. Trelford, C. A. Snell, C. E. Sutton, and R. M. Box—The work will cover the subject

of Periodontia, embracing the pathology, etiology, diagnosis and treatment of Periodontal Disease. Members of this group will be assigned patients in the Infirmary and will be expected to provide themselves with the following instruments:

McCall scalers (SSW), 4, 7, 8, 9, 13, 14.

Towner scaler U15, Clev-Dent.

Box periodontal probes, 1, 2, 3.

Box cemental curettes, 1, 2, 3, 4, 5.

Cemental curette sharpener.

Box periodontal curettes 1, 2, 3, 4, 5.

Information concerning suppliers of these instruments will be furnished at the time of registration.

Preventive Dentistry

Drs. Wallace Seccombe and M. A. Cox—The problem of susceptibility and immunity to dental disease will be studied with special reference to diet and nutrition. Diet Charts and Tables of Foods designed to meet the needs of the general dental practitioner, enabling him to make an intelligent study of susceptible cases in office practice, will be presented. Practical phases of oral hygiene will be discussed.

Clinical Dentistry and Diagnosis

Dr. A. D. A. Mason—In this subject opportunity will be afforded for members of the group to work for patients and receive chair-side instruction upon any phases of dental practice desired by the individual registrant.

Dental Praxis

Dr. F. J. Conboy—The course will consist of three lectures covering the development and management of a dental practice. The subjects of analysis of the possibilities of progressive advancement, the extension of acquaintance by well-selected contacts, the creation of favourable impressions, character analysis and management of patients, fixing and collecting fees and modern and efficient business systems will receive consideration.

Registration and Opening Lecture

Applications will be received by mail

(Continued on page 359)

ANNUAL COURSE FOR DENTAL PRACTITIONERS

DECEMBER 17TH-22ND, 1928

TIME-TABLE

HOUR	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
A. M. 9.00	Registration and Opening Lecture	Dental Surgery and Anaesthesia	Dental Surgery and Anaesthesia	Dental Surgery and Anaesthesia	Dental Surgery and Anaesthesia	Dental Surgery and Anaesthesia
10.00	<i>Groups. 7 Hours</i> (a) Operative Dentistry <i>or</i> (b) Full Denture Prosthesis* <i>or</i> (c) Dental Surgery and General Anaesthesia <i>or</i> (d) Periodontia <i>or</i> (e) Clinical Dentistry					
11.00 to 12.00		Periodontia	Periodontia	Periodontia	Orthodontia	Orthodontia
P. M. 1.30		LUNCHEON				
	Clinical Dentistry and Diagnosis	Clinical Dentistry and Diagnosis	Dental Praxis	Dental Praxis	Dental Praxis	
2.30	Preventive	Preventive	Preventive	Preventive	Preventive	
3.30 to 5.30	<i>Groups. 10 Hours</i>	(a) Partial Denture Prosthesis <i>or</i> (b) Dental Surgery and Local Anaesthesia <i>or</i> (c) Orthodontia for the General Practitioner <i>or</i> (d) Periodontia <i>or</i> (e) Clinical Dentistry <i>or</i> (f) Crown and Bridge Prosthesis				

*Note—Evening sessions will be held by this group if found necessary to complete the case.

SOCIETIES

Canadian Dental Association News

The Canadian Dental Association will meet in joint convention with the Western Canada Dental Association, at Regina, June 6th, 7th, and 8th of next year. This convention follows the Ontario meeting, and it is expected that quite a number of the dentists in Eastern Canada will come to the Ontario and then proceed to Regina.

Some of the Ontario men have also expressed their intention of taking advantage of this opportunity to fraternize with their colleagues in the West. The Western Canada Association has kindly agreed to arrange so that the fees paid by registrants from points in Canada outside of Manitoba, Alberta and Saskatchewan, will go to the Dominion Organization. It is hoped that a sufficient number of Eastern Dentists will decide to go to Regina that we will be able to arrange for a special itinerary at reduced rates.

The standing committees of the Canadian Dental Association are hard at work. The committee on Public Dental Health Education of which Dr. Harry Garvin of Somerset Bldg., Winnipeg, is the chairman, is arranging to place interesting articles on dental health in the leading papers of the Dominion. These articles should each contain about two hundred words, and should be so written that the general public can easily understand the material presented. Originality and "breeziness" help to make such articles readable and acceptable to the public. Dentists of the Dominion are urged to try their hand at writing these newspaper health articles. Who knows but that you may be able to rival Copeland or Mc-

Coy! Why not try; send the material to Dr. Garvin. The radio and motion pictures will also be used to bring the story of better dental health to the people of Canada.

Some may think that the work of the committee on Public Dental Health Education of the Canadian Dental Association will conflict with, or overlap the activities of the Canadian Dental Hygiene Council. Such is not the case. There is plenty of work for both these Dominion wide agencies, and also for an active Oral Hygiene Committee in each Province. The Canadian Dental Association, and the Canadian Dental Hygiene Council are working together in a most harmonious manner. The work of each is limited to the amount which can be accomplished by their personnel, and with the funds at their disposal, but in a spirit of glad co-operation, they will do their best to bring the story of better mouth health to the people of this country.

Dr. D. P. Mowry of 1411 Stanley St., Montreal, is chairman of the committee on Dental Education. At the present time this committee is working on a plan to provide extra mural lectures for the dentists of the Dominion. The Canadian Medical Association secured a grant of some thirty thousand dollars from the Sun Life Assurance Company, and for the last few years, they have been sending essayists and clinicians to all parts of Canada. It may be quite a while before we can enter upon such a complete programme as that being successfully carried on by the Medical Profession, but the matter is receiving the attention of a reliable and

aggressive committee, and we are on our way.

The committee on Dental Research is composed of Dr. Harold Clark, Chairman, Temple Bldg., Toronto, Dr. A. McDonagh, Toronto, Dr. Wallace Seccombe, Toronto, Dr. E. A. Grant, Toronto, Dr. R. G. McLean, Toronto, Dr. S. G. Ritchie, Halifax Dr. E. K. Bier, Winnipeg, Dr. D. J. Ferguson, Saskatoon, Dr. Frank Smith, New Westminster, Dr. M. L. Donigan, Montreal, Dr. M. A. McIntyre, Alberta and Dr. R. J. Godfrey, Toronto. The Secretary of this committee is Dr. R. J. Godfrey, of 326 Bloor St. W., Toronto, Ont. He will be glad to hear from any dentist doing research work, or from those having problems they would like to have solved.

The Legislation Committee has its headquarters at Halifax. It is composed of Dr. A. W. Faulkner, 69 Göttingen St., Halifax, Chairman, Dr. R. R. Dalglish, Sydney, N.S., Dr. A. F. Hogan, Weymouth, N.S., Dr. W. H. H. Beckwith, Halifax, N.S., Dr. W. C. Oxner, Halifax N.S., Dr. G. R. Hennigar, Halifax, N.S., Dr. J. S. Bagnall, Halifax, N.S., Dr. H. J. Merkeley, Winnipeg, Man., Dr. Frank Harwood, Moose Jaw, Sask., Dr. S. Bradley, Ottawa Ont., Dr. A. W. McClelland, Montreal, Que., Dr. A. E. Jamieson, Edmonton, Alta., Dr. E. Fraser Allen, Vancouver, B.C.

Other committees that have been appointed are:—

Committee on Publicity—Dr. Fred J. Conboy, East Block Parliament Bldg., Toronto, (Chairman); Dr. Arthur W. Ellis, and Dr. W. L. Chalmers.

Committee on State Dentistry in

Canada—Dr. J. W. Clay, 914 Herald Bldg., Calgary, Alta.; Dr. S. M. Sneddon, Edmonton, Alta.; Dr. L. T. Allen, Lethbridge, Alta.; Dr. E. M. Doyle, Calgary, Alta.

OFFICERS OF LONDON DENTAL SOCIETY

President—Dr. G. N. Howden, Watford; Secretary—Dr. S. A. Moore, London; Executive—Dr. J. F. Blair, London, Dr. E. W. Fuller, London.

ANNUAL COURSE

(Continued from page 357)

but all registrants should be present at the Dental Building, 240 College St. (corner Huron St.), at 9.00 o'clock on the morning of Monday, December 17th, 1928. The opening lecture will be given at 9.30 a.m.

Preliminary Reading

Graduates may avail themselves of the facilities of the Faculty Library to secure books for study previous to or during the progress of the course.

Fee

The fee for the course for Dental Practitioners is \$25.00. The fee is payable to the Bursar, University of Toronto, Toronto 5.

Registration Forms

Registration forms will be forwarded upon application to the Secretary, Faculty of Dentistry, 240 College Street, Toronto 2, and should be returned by December 1, 1928.

The Seventy-first Annual Session of the American Dental Association will be held in Washington, D.C., October 7-11, 1929.

Montreal Dental Assistants' Association

The Montreal Dental Assistants' Association held its opening meeting of the season at the McGill University Dental Faculty on Monday evening, October 22nd, at 8.30 P.M., with Miss E. Moye acting President in the chair.

The Chairman gave a brief outline of the activities of the society and urged each member to endeavour to procure another member and in this way to enlarge the membership of the Association. She also expressed her appreciation to all those who helped to make the organization a success, particularly Miss Rachel Ratner, the Founder and Organizer of the Association. Miss Ratner was presented with a bouquet of flowers in acknowledgment of her services.

Miss Ratner thanked the members in reply.

Miss Anna Tritt gave a very interesting recitation.

Dr. Arthur L. Walsh, Dean of the McGill University Dental Faculty and Dr. F. H. A. Baxter, Professor of McGill Dental Faculty both delivered short addresses urging the Association to continue the work which was started two years ago.

The meeting was well attended and a large number of representative Dentists of the City were present as guests of the Association including Mr. F. H. Fields (Sales Manager of the S. S. White Dental Company) of Philadelphia, who also lectured and demonstrated on Cements, Silicates and Alloys, on Tuesday, October 23rd, at 8.30 p.m.

The lecture proved to be very interesting as well as instructive.

Dominion Dental Council Examinations

The following have passed their Dominion Dental Council examination on the following subjects:

Orthodontia, Jurisprudence and Ethics—Langstroth, R. S.; McLaughlin, K. E.; Washington, L. A.

Orthodontia (only)—Deagle, M. A.; Lindsay, J. C.; McBrien, J. M.; Prestien, S. L.; Snow, C. M.; Wetmore, S. K.

Jurisprudence and Ethics (only)—Davies, O. J.

Anatomy—Deagle, M. A.; Dinsmore, G. W.; Hudson, V. F.; McLeod, G. C.; McBrien, J. M.; McLaughlin, K. E.; Moffatt, H. F.; Taylor, O. C.

Anaesthetics — Prestien, S. L.; Washington, L. A.

Pathology (only)—Davies, O. J.; Siebert, W. J.

Bacteriology (only)—Clark, H. E.; Dinsmore, G. W.; Hill, D. J.; MacLeod, G. C.; Taylor, O. C.

Pathology and Bacteriology — Buffett, L. L.; Cragg, T. E.; Langstroth, R. S.; MacLean, J. D.; McLaughlin, K. E.; Miller, F. L.; Prestien, S. L.; Snow, C. M.; Sullivan, C. A.; Thorpe,

R. C.; Washington, L. A.; Wetmore, S. K.

Materia Medica and Therapeutics—Buffett, L. L.; Cragg, T. E.; McLean, J. D.; McLaughlin, K. E.; Miller, F. L.; Oldfield, S. K.; Prestien, S. L.; Snow, C. M.; Sullivan, C. A.

Physics, Chemistry and Metallurgy—Hill, W. J.; Hudson, V. F.; McKee, A. D.; McLaughlin, K. E.; Thorpe, R. E.

Physics and Metallurgy (only) — Deagle, M. A.

Materia Medica (only)—Clark, H. E.

Physiology and Histology — Deagle, M. A.; Dinsmore, G. W. H.; Hill, D. J.; Hudson, V. F.; Macleod, G. C.; MacLean, J. D.; McKee, A. D.; McLaughlin, K. E.; Sullivan, C. A.

Histology (only)—Buffett, L. L.

Prosthetic Dentistry, etc. — Davies, O. J.; McLaughlin, K. E.; Prestien, S. L.; Sullivan, C. A.

Medicine and Surgery — Davies, O. J.; McLaughlin, K. E.; Prestien, S. L.; Snow, C. A.

Operative and Preventive Dentistry — Davies, O. J.; McLaughlin, K. E.; Prestien, S. L.; Snow, C. A.

Edmonton Dental Society

November 2nd, 1928.

Dear Doctor:

The Regular Meeting of the Society will be held in the Macdonald Hotel, on Tuesday, November 6th, at 6.15 P.M., and an interesting programme is being provided.

A Moving Picture of the Movements of the Human Mandibular Joint is to be shown. This picture was taken during an operation on the joint. The operation was performed under a local anesthetic and while the tissues were open the patient was instructed to make the movements and the Camera was used to record them.

A matter of extreme importance to every Dentist will be considered,

namely, the Proposed Medical and Dental Building. Dr. Mooney, representing the Edmonton Academy of Medicine, will be present and give us a report of their investigations. He has made a trip to some of the larger centres in connection with this matter and is in a position to show the advantages of such a building. He will report on every phase of it, including the financing. Come and hear what he has to say.

Election of Officers for the coming year will take place.

Yours truly,
W. Scott Hamilton,
Secretary,
Edmonton Dental Society.

Dental Assistants

The *Toronto Dental Assistants' Association* is having a dinner on Tuesday, November the 20th at 6.30 p.m. at Hunt's Uptown Tea Rooms at Yonge and Bloor Streets.

We want *every* Dentist's Assistant out. Our Association is growing but we still need new members.

Come on girls, get behind your own Association and make it move. Come to the dinner and get acquainted. A

good programme has been arranged and a well-known speaker will speak and you will enjoy yourself. We will look for you.

Remember, this means *YOU!*

Tickets are 75c. and may be had from Miss Alta Aitken—46 Gibson Ave.—Ra. 2664; Miss Kathleen James—86 Bloor St. W.—Ki. 1845 or Hi. 5009; Miss Madge Buik—481 Roncesvalles Ave.—Ll. 3897 or Ju. 6898.

Dental Society of Western Canada

In 1925 an attempt to reorganize the long dead Dental Society of Western Canada took place through the medium of a meeting in Winnipeg composed of Manitoba and Saskatchewan men. In 1927 Alberta joined the group and a stirring convention was held in Edmonton. 1929 is Saskatchewan's year and to prepare for the convention to be held early next June, the executive of the Dental Society of Western Canada met with the heads of the various committees of the Regina Dental Society in that city on Oct. 5. Dr. Geo. Cameron of Swift Current is President, while Dr. Harry Garvin of Winnipeg, and Dr. Leslie McIntyre of Edmonton are first and second Vice-Presidents respectively with Dr. Parker as Sec'y. and Dr. Brimacombe, Treas. Substantial progress was made in formulating plans, and with the enthusiasm of the Regina men and assurance of excellent housing conditions in the new Hotel Saskatchewan, the best meeting so far held in the west is assured.

L. Mc.

Below are the names of the officers and executives:—

President, Dr. Geo. L. Cameron, Swift Current; Vice-Presidents, Dr. M. H. Garvin, Winnipeg, Dr. Leslie McIntyre, Edmonton; Gen. Secretary, Dr. C. W. Parker, Regina; Committee Chairmen: Programme, Dr. F. S. Van Woert, Clinics, Dr. L. J. D. Fasken, Publicity, Dr. M. R. Parkin, Finance, Dr. C. W. Parker, Transportation, Dr. W. M. Blair, Hotels Arrangement, Dr. A. J. Brett, Entertainment, Dr. E. W. Mounteer, Exhibits, Dr. R. N. Grant, Advisory, Dr. W. D. Cowan.

They had a very successful executive meeting and in the evening held a dinner at which they reported to the Regina Dental Society recommending these committees. The Regina Dental Society accepted the recommendation and the work (preparatory) has been launched. It is the intention of the two bodies to make this the biggest and best convention ever held in the West.

Last week too, the annual election for the Saskatchewan Dental College was held and Drs. Winthorpe of Saskatoon and Fasken of Regina were re-elected. On Saturday last the new Council met in Regina and elected their officers for the year. They are Dr. Cowan, President; Dr. Winthorpe, Vice President and Dr. Fasken, Secy.-treas.

I will try and keep you informed from time to time as to the progress of the Western Canada in arranging for the convention but I fancy the chairman of the Publicity Committee will be sending you news and I do not wish to conflict with him.

Yours resp'y,

W. D. Cowan.

As we go to press we learn of the recent death of three prominent dentists:—

Colonel John Alexander Armstrong, C.B.E., C.M.G., Organizer of the Canadian Army Dental Corps.

Lieutenant-Colonel A. W. Winnett, Kingston, Vice-President of the Ontario Dental Association.

Dr. Edward Ramsay, St. Thomas, Ontario, a recent graduate of great promise.

Canadian Dental Research Foundation

A meeting of the Executive Committee was held October 26th, 1928, at Hart House. Dr. Gordon McLean presiding. Present: H. Clark, F. J. Conboy, A. D. A. Mason, Wallace Seccombe and E. A. Grant.

The minutes of the last meeting were read and approved.

The Auditor's report and Financial Statement for year 1927, were presented and approved.

This Report showed unpaid subscriptions to Capital Account, amounting to One Thousand, Five Hundred and Seventy Dollars (\$1,570.00) which have been standing some time. Dr. Conboy moved, seconded by Dr. Clark that at the first opportune time, these subscribers be asked to pay all or part of these amounts, and any uncollectable accounts be written off. It was decided to make this appeal early next year, after the Cummer Bulletin has been distributed.

Secretary reported re distribution of Dr. Box's latest Bulletin "Treatment of the Periodontal Pocket"—4000 circular letters with return Post Cards were sent to the Dentists of Canada, notifying them that this and Dr. Cummer's Bulletin were available. About 1800 requests have been received to date, and 1850 copies have been mailed.

Arrangements are being made to secure copies of Cummer's Bulletin from Dental Cosmos. The type, for final instalment for this is now being set up, and they will shortly submit estimates of the cost, and expect to have copies available in December.

FINANCIAL STATEMENT — CURRENT ACCOUNT:

Receipts:

January 1st, 1928—Balance
on hand\$1,122.50
Subscription from Royal Col-
lege of Dental Surgeons.... 1,000.00

Interest from National Trust
Fund 469.44
Received from sale of Bulle-
tins 177.00

Total Receipts\$2,769.69

Disbursements:

Secretary of State, fee for
filing returns\$ 6.00
Notary—Affidavits for returns 2.00
Stenographic Service 10.00
Thorne, Mulholland, Howson
and McPherson, Auditing
Books, 1927 40.00
T. A. Curry, Printing En-
velopes (4500) 14.75
Wilson Press, printing letters
and Post Cards (4500) 69.86
Cash for Postage 225.00
Bank exchange 1.92
Balance on hand\$2,400.16

Accounts Payable:

Students' Book Department—
Refund of amount received
from Dr. Lerner, N. Y., for
Dr. Box's Bulletin\$ 1.00
Stenographic Assistance 40.00
Rent for year 1928—part of
office occupied jointly with
the Canadian Dental Hy-
giene Council 100.00

It was moved by Mason, seconded by Conboy, that the Report be adopted, and the Accounts paid.
CARRIED.

Some material on Inlay cavity preparation, giving a number of original preparations, was submitted by Dr. H. E. Bulyea, Head of the Department of Dentistry of the University of Alberta, Edmonton.

It was decided that the material was well worth publishing, and that Dr. Bulyea should be asked to prepare a text to accompany the illustrations, which cover fully, instrumentation, technic of cavity preparation, making a wax pattern, etc.

A paper was also submitted, covering some Research work done by Dr. Harriman and Associates at the Western Hospital, Toronto, on the etiology of periodontal disease. It was decided, before reaching a decision as to publishing this material, that more

data should be secured, and Drs. Mason, Webster and McLean were appointed a Committee to interview this Research group, in order to secure more information.

THE MEETING ADJOURNED.

E. A. Grant, Sec'y.

Montreal University

Progress achieved by the dental faculty of the University of Montreal during a quarter century of activity along pathways that originated in difficulties and were beset with trials was celebrated last night in enthusiastic manner with a banquet at the Cercle Universitaire. Coincident with the celebration of the 25 years of work accomplished is the Congress of French-speaking surgeon-dentists of North America which is being held in Montreal this week, the occasion giving graduates of the dental faculty a special opportunity to pay tribute to their alma mater.

There were present representatives of the profession from McGill University, from Toronto, and from the United States, while many letters from dental faculties in the United States paid tribute to what had been accomplished by the University of Montreal in this science. Dr. Eudore Dubeau, dean of the faculty, was the guest of honor. It was he who took the first steps to link up dental work with the University of Montreal, then Laval, in 1902, and recognition of his work, and that of his colleague, Dr. Joseph Nolin, now vice-dean of the faculty, was recognized with generous applause. Dr. Dubeau was presented with a bust of himself, an excellently executed work done by Alice Nolin, daughter of Dr. Nolin. Graduates of the university's dental school are in all parts of the world, and from them

came greetings of affection and regard.

The banquet was presided over by Dr. S. Gaudreau, of St. Hyacinthe, president of the Congress, and at the head table with him were Sir Lomer Gouin, president of the University of Montreal, Rev. Canon Chartier, Henri Courier, consul-general of France; Dr. T. Parizeau, vice-dean of the medical faculty; Dr. A. L. Walsh, dean of the McGill dental faculty; Dr. A. H. Desloges, Dr. G. H. Kent, vice-president of the Congress; Dr. W. Seccombe, dean of the dental school of Toronto; Dr. A. Lesage, president of the Medical Council of Notre Dame Hospital; L. J. Tarte, president of the St. Jeanne d'Arc Hospital; Rev. Father Porcheron, S.J., the first graduate of the school, 1903, who left the profession to become a Jesuit; Dr. J. H. Bourdon, Dr. D. P. Mowry, president of the Provincial Bureau of Dentists; Dr. A. E. Webster, honorary dean of the dental school of Toronto; Victor Dore, president of the Montreal Catholic School Commission; Dr. C. Trotter, president of the Canadian Dental Hygiene Council; Jos. Contant, president of the pharmacy school of the University of Montreal; Augustin Frigon, director of the Ecole Polytechnique; Dr. C. J. Hollister, director of the Pennsylvania Dental Hygiene Service; Dr. Leo Parizeau, Dr. J. A. Baudoin, Dr. Martin Dewey, of New York; Dr. W. E. Cummer, professor at the Toronto Dental School; Henri Lau-

reys, Dr. Ernest Gendreau, Dr. W. A. Harper, of Chicago; Dr. I. H. Hante, of Toronto; Dr. V. H. Olivier, Dr. E. H. Charron, Leo G. Ryan, Dr. L. Franchere and Dr. A. Beauchamp, ex-professors of the faculty; Rev. Father C. Forest, dean of the faculty of philosophy, and Rev. Father O. Maurault, parish priest of Notre Dame.

DR. DUBEAU'S RETROSPECT.

Dr. Dubeau, in returning thanks for the bust presented to him, said it would be placed in one of the rooms of the faculty building, and he hoped that soon there would be a bust of Dr. Nolin, and of the regretted Dr. J. G. A. Gendreau. He recalled that from 1895 to 1902 there was a dental school in Montreal which was operated under the auspices of the Association of Dentists of the Province of Quebec, various attempts to have the two universities take over dental surgery having been unavailing. In 1902 McGill yielded to the solicitations of Dr. F. A. Stevenson, and he secured the aid of Mgr. Mathieu, then rector of Laval University, to the same end, and affiliation to the latter university was granted, and the legal recognition came through the aid of Sir Lomer Gouin. When the university took over the school, which had been cared for by the three founders, himself, Dr. Nolin and Dr. Gendreau, assets of \$71,000 were turned over to the university with the one condition that

the three mentioned would keep their professorships. Since that time the school had grown, being created a faculty in 1923. It held a high place in North America, and had been specially complimented by the Carnegie Foundation because it had kept its costs down lower than any other dental faculty on the continent.

In the 25 years of its existence, the faculty had turned out 475 dentists, of whom 433 practise their profession in this province, and the other 42 are divided as follows: 31 in Europe, five in the United States, four in the Argentine, one in Japan and one in Haiti. Dr. Dubeau said that Dr. Mayo, of Rochester, Minn., had declared that the next decade in hygiene belongs to the dental profession, and had wondered whether the opportunity would be seized. The speaker believed advantage would be taken of the opportunity, and it was the intention to work in intimate co-operation with the medical faculty.

Sir Lomer Gouin, after complimenting the dental faculty on what had been accomplished, made a plea to all its graduates to aid the university in the great task it has ahead of it. He urged that each one present be an apostle in his own neighborhood for the cause of the university, so that all Canada would know that Montreal had a French-speaking university capable of playing a big part.

Dental Laws

The work accomplished during the month of July, 1928, in answering questions concerning dental laws and license regulations touched upon four continents and an island continent—namely: Australia, including Canberra, F.C.T., and New South Wales; also, the following states, provinces, countries, and islands located within the four continents: California, Canada (Province of Ontario), Chili, England, Germany, Grenada, Holland, Java, Mexico, Missouri, Netherlands, Switzerland, the United States (entire), Union of South Africa (Transvaal), Wyoming. Arizona and New Jersey should be added thereto, by telephone calls and personal visits of dentists seeking information about dental laws.

The new dental laws of the Windward Islands (Grenada), the National Code Regulating the Professions in Mexico (Codigo Sanitario) which includes the dental requirements, the dental regulations of the Cantons of

Switzerland, the new "Consolidating and Amending Act of the Union of South Africa," in force in the Union on January 1, 1929, "relating to Medical Practice, Dentists," etc., and to provide for the extension of this act to the mandated territory of SOUTH-WEST AFRICA, were also received during this month.

During the last few years 110 dental laws printed in 20 languages have been more or less changed out of 159 acts regulating the practice of dentistry in 300 commonwealths throughout the world, by new legislation readjusting LEGAL requirements for dentists.

This represents the result of only one month's efforts. Multiply it by twelve and you gain a faint idea of the character, extent and far-reaching effects of the work.

Alphonso Irwin, D.D.S.
425 Cooper Street
Camden, N. J.
U. S. A.

Dental Inspections

The words of Hon. Athanase David have led to a discussion in the Quebec press as to the desirability of instituting dental inspections. "A child attending school in Montreal is obliged to submit to vaccination against smallpox," observes the Montreal Gazette, "and this regulation is not quarrelled with, a state of affairs in itself which must give cause for satisfaction when the protests against vaccination of about half a century ago in Montreal are recalled. With so many well-qualified dentists available in the city, it should be possible to arrange for dental examination, to be followed by dental treatment, for school children; and, as Hon. Mr. David

very pertinently pointed out, this is also the best means of interesting the people at home in the same subject." The "people at home" may well take a serious interest in this essential to their children's health. Fortunately, of recent years there has been a great awakening of the public to the importance of oral hygiene; but there is still a deplorable amount of neglect. The time to have irregularities corrected is when the child is young. There is no doubt that a very large percentage of the disease and suffering of adult life is due to the lack of skilled dental attention in the earlier years.

—Editorial North Bay Nugget.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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TORONTO, NOVEMBER, 1928

No. 11

Oral Surgery Directed by a Dentist

In the general hospital at Michigan University is a real department of oral surgery under the direction of a dentist. Dr. Chalmers Lyons is professor of oral surgery in both faculties, medicine and dentistry. In the dental school he does such operations as do not require the equipment and appliances for general anaesthesia, rest rooms and beds. In the hospital the out-door department of oral surgery has three operating rooms, laboratories, waiting rooms, office, three house surgeons, who are graduates in dentistry, doing three years' house work in preparation for the practice of oral surgery. There are three regular nurses. On the fifth floor are three small wards for cleft palate patients with adjoining operating rooms, etc., with a nurse of long experience in charge. This ward is for children only, most of them under one year of age. Professor Lyons is of the opinion the Brophy operation is the choice for the very young. At this time there are about twenty cleft palate cases in the hospital. Last year more than four hundred cases were treated. It seems that Michigan has more than its share of such misfortunes. Thought to be more prevalent among the Finns, Swedes and Norwegians. Besides these cases there are many patients suffering from fractures of the jaws and osteomyelitis scattered throughout the hospital. The hospital has over eleven hundred beds.

Another interesting hospital feature at Ann Arbor is a hospital for students only. Each of the thirteen thousand students pays four dollars for medical services for the year. This includes hospital accommodation.

What About Dental Caries?

No matter what is done in the field of cavity preparation, improvements in filling materials, root canal therapy, dental focal infection or mal-occlusions, the most important problem remains unsolved. When dental caries is solved all is solved. Every now and then someone adds a little to the sum total known about dental caries. Some day there will be such a mass of evidence collected that the remaining characteristics will easily fall before the mind of some lucky investigator.

Diet has held the boards for many years and it bids fair to be a very important factor when the final discovery is made.

It would appear that Dr. Bunting is collecting data which, when put together, will weld another link in the chain. His investigations into the diet of hundreds of children would indicate that those fed on a low carbo-hydrate diet have less decay than those fed on a high carbo-hydrate diet, and what is more significant is that children with dental caries always have the bacillus acidophilus present. Caries and acidophilus go hand in hand. Sufficient work has been done to establish this fact in the minds of those investigating the problem.

It has also been established that children having caries and the bacillus cease to have caries when the acid producing agent is destroyed. Thus a treatment has been established. It would appear that applications of dilute solutions of metaphen applied to the teeth and gums after a thorough prophylaxis will destroy the bacillus acidophilus. A mouth wash of this and other drugs used by the patient is expected to prevent dental caries. Up to the present time this treatment has not been tried out in private practice to any serious extent. Although this experimental work has been going on for several years there does not seem to be any large following in the profession. If it had been some new instrument to administer an anaesthetic or a new filling that had been discovered the whole dental world would have known about it before six years had elapsed. Scientific investigators are usually poor advertisers and without press agents.

Newspaper Publicity of Health

The State of Michigan has a public health committee composed of representatives from medicine, agriculture, dentistry, nursing, Michigan University, Detroit University, Boards of Health. A sub-committee composed of a chairman, a secretary and others, are a publicity committee. It is the intention to supply the eleven daily papers in the State with public health stuff. About 500 words in each article. The newspapers pay sufficient to employ a secretary who answers all questions asked by the readers of the papers. Dentistry is asked to supply an article each week. The method of organization and the possibility of effective publicity should be of interest to Canadian health publicity.

CORRESPONDENCE

Dental Economics

Oct. 6, 1928.

Editor Dominion Dental Journal:

For several years I have investigated conditions regarding the economic side of dentistry. This year I have spent several weeks visiting offices and talking to dentists about the business side of a practice.

There seems to be certain localities where some people demand certain types of work and where fees are fair. Other places the people demand work at certain fees regardless of the quality of the service. Some dentists are satisfied and some are not. Some will not speak to their confreres.

I think it my part to point out what I believe to be the solution to some problems.

We nearly all believe in educating the public to better dentistry and to health dentistry but fall down when we try to apply it in practice. Before the profession can educate the public we must find out where we stand and present a united front. The dentist that is satisfied is either in a rut or has decided to forget his profession. Young men are not entering dentistry to-day because of economic conditions and the morale of the profession. Every man must catch some glimpse of what dentistry can accomplish as a profession and be induced to spend **TIME AND ENERGY** in developing such ideals. If we cannot have this leadership through present organizations it will come from outside.

The public should be educated; for example:—If a patient comes to a dentist and has a tooth removed and he advises filling other decayed teeth and receives the reply "NO! I do not believe in having teeth filled". How

can he tell that patient they are wrong? It is our duty and problem, shall we talk or give them booklets and at whose expense?

If we are to give the high service modern dentistry demands we must use equipment and this costs money and who shall pay for its use?

There are only four ways to increase your income:

- (1) Higher fees.
- (2) More patients.
- (3) Combination of above.
- (4) More work for each patient.

I have devoted considerable time to a study of costs of keeping a dental office open, and the dentist who is financially unable to-day to provide a modern service is so because he has given too much away in the past and does not know what it costs to render a service. There are very few dentists whose overhead is less than 2 or 3 dollars per hour at the chair, and yet there are many who do extraction, root canal work and local anaesthesia free. There are hundreds of dentists who give gas for three dollars and supply a doctor or a nurse and operating room without any charge. There are hundreds who read X rays for nothing, examine mouths and give free consultation.

The type of service rendered under these conditions is not likely to be very modern nor high class. In addition every dentist equipped to give this service at a reasonable fee is handicapped. Such men make little effort to keep abreast of new ideas.

This is all wrong.

Every patient that sits in your chair is there for something you have and every minute at the chair costs

you money, and somewhere there should be a fee charged definitely for that service. My physician, lawyer and surgeon both work on that basis but I cannot do that because the dentists in my district have not educated the people to that and the dentists do not present a united front, and are not willing to try to get a united front. Dentists who say well I cannot do that have themselves to blame for who is educating the people in any district but the dentists themselves and the advertisers of tooth paste and mouth-washes? People are willing to pay for reliable service if they are convinced they are getting value. Clinics are based on that very idea.

The dentist who provides the service will not always find the fee take care of itself. There are dentists who claim to make an MOD gold inlay for a bicuspid for \$5.00 and others say they must get \$30.00. Some make a plate for \$12.00 and others a denture for a hundred. The low fees indicate no study of costs and the high fees show

high costs and likely high rents and type of service.

Surely there is a screw loose somewhere. Surely it is time we got down to brass tacks on this problem of economics and tell the people dental service is worth just what they pay for it. This is one way to start to present a united front to the public.

I am trying to raise the status and outlook of dentists and help some to get on their feet economically, and overcome the attitude of some patients that the dental fee is 95% profit.

If I am able to do this I shall feel I have made a contribution to dentistry many times more valuable than ten volumes of technique. For MODERN technique is not likely used unless there is an adequate fee.

Unless these fees are quickly collected the accounts are likely to be discounted and so dentists are in need of a collection department under capable management.

H. D. Morris.

Sore Throat

Oct. 11, 1928.

Dear Dr. Webster:-

I have a patient about 28 or 29 years of age, lady. She has a bridge in the lower anterior from left 1st bicuspid to cuspid on right. These teeth were removed on account of pyorrhea. Last November she had her tonsils and adenoids removed, and in January she had this bridge put in. Now she is troubled a lot with throat trouble, Catarrh, etc., and one or two medical men say it is caused by this gold work in her mouth, and they say it should be removed. What do you think of it?

I have another patient with throat trouble similar to this one, with a bridge or two in her mouth also but

her medical doctor did not mention the gold work in her case.

Would you mind giving me some information on this as soon as convenient?

Dear Doctor,—

The general opinion of the dental profession is that gold is not acted upon by the fluids of the mouth and therefore could not cause sore throat. It must be kept in mind that some very low grade solders are used in bridge work. But the amount of solution could hardly do much damage.

The length of the bridge, its location and the reason for the loss of the teeth are more likely to be the cause of the trouble than the metal.

(Editor).

Dental Solutions

Dear Doctor,

I have a patient presenting a very unusual condition. His diet consists of the proper foods, his history is good, he has had no diseases worthy of mention, his parents are healthy in every respect and so is he, yet his teeth are very bad. They are very crumbly and do not hold a filling of any kind for long. He can make a cavity with a tooth-pick or pick a filling out a few days after its insertion. He is unable to bite anything the least bit hard. I have not asked for an x-ray because I thought it would be of no use to me in this case. Patient is twenty-five, is a radio salesman, and in perfect health otherwise according to his physician. Could you offer any suggestion as to the cause or treatment of this patient?

Any advice will be thankfully received. Trusting this finds you in good health and hoping to hear from you at an early date,

I remain,
Yours sincerely,

Reply: Assuming that the diet and prophylactic measures are adequate to eliminate these from consideration I should advise directing your attention to the following facts.

It has been stated from time to time that the teeth mirror the endocrine make up of the individual, and distur-

bances in these glands result in expression in disturbances of the dental apparatus. Therefore, have the patient's medical adviser examine him with these facts in view.

Again, the *Bacillus Acidophilus* virulently and content varies greatly in each mouth and it is quite possible for your patient to be under the worst category in this respect without having noticeable sepsis present in the mouth.

It would be advisable therefore to verify this by microscopical examination.

Should this bacillus be found to be present then the use of Metaphen 1-500 applied to the teeth and interproximal spaces, preceded by thorough prophylactic measures is the procedure required. This should be followed by giving the patient a 1-5000 Metaphen mouth wash to use.

With three to five treatments on consecutive days the *Bacillus* test should give negative results and this should be checked up from time to time.

Also the nature of the saliva should be determined and controlled by the use of milk of magnesia or lime water.

Trusting that this will give complete satisfaction.

Yours truly,

X-Ray not Sufficient for Diagnosis

MacLeod, Alberta,
November 2nd, 1928.

Dear Dr. Webster,

I noticed an article on root canal work in your *Dominion Dental Journal* for October. I have had some little experience personally with non

vital teeth, and would like to pass it on.

I had not been feeling up to the mark so I had all my non vital teeth radiographed. Two other dentists and myself looked the plates over and they seemed to be satisfactory save that

the upper first molar was badly exostosed on the lingual root. I decided to have the two first molars extracted namely upper and lower.

The upper first molar was extracted. It caused the dentist a great deal of anxiety because the fact that non vital teeth are so brittle and the exostosed root. The tooth was extracted under aseptic conditions. However, it put me to bed for a day and I was left quite weak for some time. Later it practically refused to heal but ultimately did so.

The lower first molar was extracted. About twenty-four hours later I developed severe pains in my joints and my shoulder ached. This lasted for some five or six hours. I might say neither of these teeth were sore to tapping and looked that healthy, that the dentist that pulled them wondered if it were best to do so.

Do you think the radiograph finds the trouble in time, or has a great deal of damage been done before it does discover it? Might it not be that the infection at the end of roots of the teeth had been poisoning my system for some time past.

Thanking you in advance,

I am yours very truly,

Answer: The general opinion is that a ray shows only the absence of radio opaque substances such as tooth or bone or filling. Since infection can be present without the destruction of radio opaque substances then infection may be present without any evidence in an x-ray picture. This coincides with clinical observation. Long standing infected tooth roots are often a source of system symptoms without x-ray evidence. What you say may be perfectly true. Editor.

A Definition

Dr. A. E. Webster,
Toronto, Ont., Canada
My dear Dr. Webster:

Our definition of a perfect set of teeth:—

All 32 teeth present.

No fillings.

No caries.

No pits or fissures.

Normal occlusion.

What is your definition?

Yours sincerely,

THADDEUS P. HYATT.

My Dear Doctor Hyatt:

I haven't got one that I am prepared to defend, but I should say that it is a set of teeth that conforms to the normal, for that individual.

Your definition wouldn't do, because it is impossible to determine the presence of pits and fissures without sections and a microscope.

I have never seen normal occlusion in natural teeth when they could be examined. It is quite possible to have 32 teeth, no fillings, no caries, no pits, and fissures and normal occlusion, and yet individual deformities of teeth which would put them out of a perfect class.

A definition should have only one obvious characteristic that separates the thing defined from all other like or unlike objects.

A definition which gets into details is lost; one might as well say, no pulp stones, no receded pulps, as no caries. Such a definition is not a definition at all, but is a treatise on anatomy and pathology.

A perfect set of teeth implies perfect teeth and perfect arrangement which is never found, no more than perfect leaves. Nature always aims at perfection, but always falls short.

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that period, have from time to time been embodied.

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Name

Address

Enclose card or letterhead

2992 Can.

Childrens' Teeth—How to Use and Keep Them

(Compiled by The American Academy of Periodontology, September, 1923)

DECIDUOUS TEETH

What are deciduous teeth?

They are the first teeth. They come in from about the fourth month to 2 years of age.

How long should they last?

Until naturally shed between the ages of 6 and 12 years.

Are they important?

Yes. No effort should be spared to keep them.

Why are they important?

Because the child needs them to chew its food during the greater part of the most rapid growth period of its life. Because all of the deciduous teeth are in use for six years, and part of them as long as ten years of the child's life.

Are they as important as the permanent teeth?

Yes. In health or in disease they have a vital influence over the growth and development of the child's body and mind.

What are the usual signs of teething in healthy children?

An increased flow of saliva.

A tendency to put the finger or some hard article in the mouth and bite on it.

Swollen and congested gums.

Fretfulness and disturbed sleep.

Often a slight fever.

Loss of usual appetite.

Sometimes slight diarrhea.

How long do these symptoms last?

Usually only for three or four days.

UPPER TEETH

LOWER TEETH



CENTRAL INCISOR

LATERAL INCISOR

CUSPID

FIRST MOLAR

SECOND MOLAR

SECOND MOLAR

FIRST MOLAR

CUSPID

LATERAL INCISOR

CENTRAL INCISOR

AGE AT WHICH THEY ERUPT

Central incisors	4 to 9 months of age
Lateral incisors	7 to 10 months of age
First molars	12 months of age
Canines or cuspids	18 months of age
Second molars	2 years of age



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while the teeth are coming through the gums.

Is teething responsible for many of the ailments it is supposed to cause?

No. Most of the digestive disturbances occurring during babyhood are due to bad feeding and to chilling of the body.

What may be done to aid teething?

Give the baby right food, and plenty of cool boiled water. Give it a freshly cooked chicken leg or thigh bone without meat on it, to chew on. A hard dry crust of bread may be given also—as a teething ring.

Is lancing of the gums an aid in difficult teething?

Sometimes. Great care should be taken to keep the wound clean and so avoid infection after lancing.

When do deciduous teeth come in, or erupt?

Refer to the accompanying chart.

What may be done to keep the deciduous teeth?

See that the child has plenty of the kinds of foods that furnish mineral salts and vitamins.

Give the child foods that are cleansing to the teeth.

Teach the child how to masticate all food thoroughly.

Keep the mouth clean.

Have the teeth examined and treated at least two times a year.

See that the child has plenty of rest and sleep, fresh air and happy play.

What are the foods which furnish mineral salts and vitamins?

Milk and other dairy products, green vegetables, especially green meaty vegetables, fruits, breads and cereals made from whole grains.

Why are these foods necessary in keeping the teeth sound?

Without a sufficient supply of them the teeth are starved and, because not nourished, are more liable to disease.

What foods are cleansing to the teeth?

Fruits, raw vegetables, and coarse, hard foods such as a dry toast, zwiebach and breads made from whole grains.

When should the fruits be eaten in order to have best cleansing effect on the teeth?

At the end of the meal.

Why is thorough mastication of food necessary?

For two reasons: First, because satisfactory nourishment of the body, including the teeth and the tissues that support them, depends upon proper digestion of food, and complete digestion of food is possible only when the food has been thoroughly masticated.

Second, because exercise of the teeth and their foundation tissues is necessary to their health and development, and the best way to exercise them is by using them.

How may the child be taught to masticate its food thoroughly?

(Continued in next issue)

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DOMINION DENTAL JOURNAL

Published by Consolidated Press, Ltd., Toronto.

Established: Old Series 1868

New Series 1889

Subscription Price in Canada, Per Year, \$1.00; 2 years, \$1.75; 5 years, \$3.00
Gt. B., U.S.A. and Mexico, \$2.50; All other countries \$3.00 per year.

OFFICIAL ORGAN OF LEADING DENTAL ASSOCIATIONS IN
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LARGEST NUMBER OF SUBSCRIBERS IN CANADA

Editor, A. E. WEBSTER, D.D.S., M.D.S., M.D.

Honorary Dean Royal College of Dental Surgeons, Toronto.

Address Business Communications to Consolidated Press, Ltd.
73 Richmond St. W., Toronto 2.

E. DeWITT HUTT, Business Manager.

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Dominion Dental Journal

Vol. XL

TORONTO, DECEMBER, 1928

No. 12

Some Morphological Changes in the Jaw Bones Produced by Orthodontic Treatment

S. S. CROUCH, D.D.S., ORTHODONTIC CLUB, TORONTO

A Summary of a Paper Presented by Dr. Milo Heilman, New York, with Additional Evidence on "Some Morphological Changes in the Jaw Bones Produced by Orthodontic Treatment."

Dr. Hellman in introducing his subject emphasizes the necessity of a general knowledge of what transpires within the structures constituting the bones, the changes of outward form of which he is drawing attention to in his Paper.

My present interest is in this change in form and I shall therefore give the utmost of my attention to the former.

The Author quotes Prof. Morgan of Columbia as follows:—

"Animals and plants are so constituted that one of their chief characteristics is that they respond to their natural environment in such a way as to insure their continued existence. These responses are in the main physiological, and therefore in large part transitory; but in some cases the response is structural, involving a temporary or even a permanent change in form and structure that persists, at least, as long as the external conditions that called it forth remain. Thus, external conditions sometimes cause adaptive structural changes in organisms. We are familiar with some effects of this sort

in our own bodies. e.g. pressure on the skin, if long continued, causes it to become thicker, and more capable of resisting the injurious effects of pressure."

A Histological review is given of the structure of bone in order to refresh the reader's mind on this subject.

Attention is called to the factors concerned in the processes which bring about the structural changes mentioned. The recognition of the cell theory is the first of these, it being established that the cell is the structural unit of all living things. All manifestations of life are accomplished by the chemical activities of the substance constituting the cell. Noyes maintains that all tissues are made up of cells, and intercellular substances, the vital characteristics are given to tissues by the cells and the physical characteristics by the intercellular substance. This latter is entirely dependent upon the former for formation and maintenance. For example the fibres of fibrous tissues have no ability to grow or attach themselves to a surface without the

presence of living cells or fibroblasts.

The most important characteristic of connective tissue is its adaptability to changing conditions or influences which cause it to assume the form most suitable to fulfil the requirements of its physical environment. The activity of its cells brings about an increased amount of intercellular substance, a destruction of this material, or a change in its character, as required.

From Histology we learn that all the cells of the various types of connective tissue are similar in character and indeed originate in a common form of embryonic connective tissue which changes from one form to another as the need arises; so in the case of bone, embryonic connective tissue becomes first fibrous tissue which is then arranged in a definite membrane and next transferred into cartilage. This cartilage is infiltrated by calcareous deposits and this, in adapting itself to its environment, becomes bone.

Noyes defines bone as "A connective tissue whose intercellular substance is calcified and arranged in layers around canals or spaces."

If bone is examined the structural elements are found to be:

1. Intercellular substance or matrix arranged in layers called lamellae.

2. Cells which are found in spaces called lacunae between the layers.

3. These lacunae are joined by channels or canaliculi which carry nourishment to the cells.

Three forms of bone are recognized:

1. Subperiosteal bone with lamellae in layers.

2. Haversian system bone, lamellae concentrically arranged around canals as in the long bones.

3. Cancellous bone in which the lamellae are arranged in delicate plates with large spaces filled with embryonic connective tissues.

Subperiosteal bone usually consists

of only a few layers. When through any cause additional layers are laid down processes are set up which absorb some of the bone and the layers become arranged around canals and become Haversian System bone. The Haversian System bone is not allowed to become thicker than necessary but some becomes dissolved out by absorption into large irregular spaces in which a few layers are found transforming it into cancellous bone. The plates of cancellous bone are not arranged haphazard, for a close observation shows a definite arrangement determined by the direction of stress on the compact bone which they support. These plates or spicules are constantly being rearranged. Thus it can be realized that bone, though a hard rigid substance, is really a plastic tissue, which is continually being modified by the mechanical forces to which it is subjected.

"The alveolar process anatomically consists of an outer and an inner layer of compact bone, and intervening between the two is a mass of cancellous tissue.

"The relative quantity of the two forms of bone varies greatly in different individuals and in the different regions of the mouth in the same individual, depending upon the resistance they are called upon to yield."

"Histologically, we find these tissues, as previously mentioned, to consist of subperiosteal, Haversian system and cancellous bone. And that each variety depends, as stated above, upon the manner in which the cells and the intercellular substance are arranged. Furthermore, depending upon the mechanical conditions to which these tissues are subjected, the bone cells in these regions as well as elsewhere are ever ready to relinquish their adult form, assume their embryonal type, i.e., they become osteoblasts, and together with the osteoclasts they in-

itiate those processes that result in the absorption and deposition of bone tissue. Under normal conditions this process may be observed during the period of the shedding of the deciduous dentures and eruption of the permanent series."

Moreover, the process of bone transformation may also be set up by artificial means. As has been experimentally demonstrated by Sir William MacEwen, of Glasgow, "when stimuli are applied to bone, the cells in the interior proliferate and escape into the Haversian canals and are carried peripherally into the first space suitable for the expansion, which is generally the subperiosteal areolar tissue."

MacEwen demonstrated that as soon as the bone corpuscles are liberated from their confinement through stimuli, injury or operation, they assume their embryonic type and revert to their vegetative activities, i.e., they feed, grow and reproduce. He further proves that "the osteoblasts once formed have the power of direct and vigorous proliferation, are capable after dissemination of growing in the midst of soft tissues, of being carried by the blood stream and deposited in blood clot, where they proliferate after the matrix has been supplied with new formed blood vessels. The bone cell has the function of surrounding itself with a calcareous zone, which it controls under the agency of the trophic nerves." As long as the bone cell remains embryonic, it exhibits the power of proliferation: but when it reaches maturity, it assumes the fixed tissue type and becomes stationary, though the proliferating potentiality still remains. The extent to which the proliferation may be encouraged depends upon the agent which, while increasing and prolonging this power of the osteoblasts, must not lower its vitality."

"In a series of experiments conducted by Dr. Albin Oppenheim, of

Vienna, these fundamental principles were amply verified. With the aim in view of discovering the nature of the changes in the bone tissues, incident to orthodontic treatment, in well as the changes occurring during retention, Oppenheim utilized several baboons (*Cynocephalus*) for his experiments. He adjusted the Angle Orthodontic appliances upon their teeth, and after forty days of treatment killed the animals, imbedded and stained the tissues necessary and made microscopic sections for study."

Hellman then shows by illustrations the changes occurring in the structure of the bone, which are briefly, as follows:—

An incisor was moved labially, the bone spicules of the alveolus were parallel with the long axis of the tooth before treatment. After forty days, movement the labial alveolar wall shows these spicules perpendicular to the long axis of the tooth, the new bone incompletely calcified is densely filled with osteoblasts, there are few osteoblasts showing that the processes of deposition have gained an advantage over those of absorption. In the apical third where there was less movement the lamellae are arranged longitudinally, showing true compact bone. This occurs to the remainder during retention as demonstrated by German investigations.

These experiments prove that there is a reaction taking place in the substance of bone due to pressure on the teeth by orthodontic appliances. This reaction is manifested by the histological changes in the structural elements and produces a modification of the architectural arrangement of the bone spicules.

Coming now to the morphological changes brought about by orthodontic treatment, Hellman illustrates these from the work of Hauptmeyer of Germany, with radiographs of mandibles taken before and after treatment, showing marked changes

in the angles, in the depths of the bodies and in the distances between the condyles and coronoid process. He then presents reports of three cases from his own practice, one each of types I. II. III. Angle classification. The casts made before and after treatment show marked changes in the form such as are commonly seen in everyday practice by every orthodontist. Tables of measurement are also given illustrating the amount of development gained. Attention is also drawn to the marked nasal growth and the relief of mouthbreathing, etc., brought about by the orthodontic treatment.

In summing up the main points are:—

1. That bone is that form of connective tissue in which its intercellular substance is calcified and arranged in layers around nutrient canals or spaces. And that bone, while a hard and rigid substance, is really a plastic tissue and is continually being modified by the mechanical conditions to which it is subjected.

2. That the alveolar processes and their adjacent bony structures, being constituted of the same structural elements as bone tissue in general, are governed by the same general laws; i.e., their form is dependent upon the mechanical conditions to which they are subjected.

3. That an artificial alteration of these mechanical conditions will produce a relative change in structure and form of the parts involved. This modification will persist when adaptive in character; i.e., when it is of advantage to the existence of the individual, and when the conditions

that brought it about persist or are substituted by function.

4. That, as malocclusion of the teeth has been recognized to be due to malformations in the jaw bone, the teeth themselves being but diagnostic landmarks, the corrective measures are based upon mechanical stimulation of the tissues involved, and applied in such a manner as to alter the bones in their form, size and position, so as to be in harmony with the other related parts.

Some points which might be emphasized with profit are:—

1. Gentle pressure or small application of force because the spiculae of bone which grow in the direction of the force applied should be made to grow very slowly.

2. The rate of growth varies greatly in individuals according to age, diet and general health, therefore the growth to be expected in cases under treatment will likewise vary.

3. Active bone growth is found to be greatest up to eighteen years of age, gradually slowing up.

4. A period of retention is important after tooth movement or bone development of any kind to allow the newly built bone to become fully organized and thus retain its new form.

5. An adequate knowledge of bone development, growth and histology is essential to the safe and successful practices of Orthodontia. In fine, should not the Orthodontist ask himself when making every application of force, whether by mechanical appliance or muscular exercise; what effect will this applied force have upon the structure and form of the bone involved?

Questions Gathered from Correspondents

March 1, 1928

ANSWERED BY ORMAN B. WHITMAN

Question 4 (c). How would you remove yellow or brown areas in the enamel of teeth?

Answer — It is impossible to remove yellow or brown stains in the enamel of teeth.

Authorities: Arthur Hopewell-Smith, C. Bodecker, F. S. McKay, T. B. Beust, J. L. Williams, Buckley, etc.

Question 8 (c). In what cases is arsenic unsuitable for pulp devitalization?

Answer — The use of arsenic as a devitalization agent is to a large extent obsolete, (Dr. L. F. Kreuger) at least it should be used mostly as a last resort.

It should not be used in the following cases:

1. In teeth which are not completely calcified.

2. In decayed teeth, where the decay has gone past the bifurcation of the roots, or made its way through one of the roots, in the former of these cases hypertrophial tissue may readily be mistaken for the pulpal tissue.

3. In gingival cavities where there is a chance that the gum tissue may become exposed to the action of the arsenic.

4. In cases where the canal is obstructed, i.e. pulp stones.

5. It must not be used in some cases of multirooted teeth where the rate of absorption in the various roots may vary.

6. Where the pulp is partially dead, the arsenic will not be absorbed by the necrotic tissue.

7. Where the keeping of the appointment by the patient is uncertain.

8. In any case where the progress of the arsenic cannot to a large extent be controlled.

Question 12 (12). What instructions would you give a patient following a root canal filling and treatment?

Above all and foremost the dentist should protect himself. Explain to the patient the difficulties, methods and chances of success of the operation, how it is more successful with the anterior teeth and so forth.

Explain that the tooth may discolor, either immediately or with the duration of time.

Infection may also set in, either in the bone, apical tissues or pericemental membrane to say nothing of the portion of the root canal which may not be filled.

Drug irritation is also the cause of failure.

So much depends upon nature and the general health of the patient to clear up the infected area that the dentist cannot make any definite promises.

It is necessary to explain also that in the event of failure that in all probability the tooth will have to be extracted.

As a rule it is not necessary to tell the patient to return immediately if there is any soreness or pain felt, they will do that quick enough anyway. However it is better to tell the patient that in event of pain in four or five hours, trauma is the cause, and the tooth will soon cease to bother. On the other hand if the tooth starts to pain at about thirty-six to forty-eight hours after the operation the patient should return to the Dentist immediately.

Question 16 (d). What are the causes of pain following root canal filling, give treatment.

Answer—Pain following root canal filling is caused by:—

1. Drug irritation.

This may affect the peridental membrane, or the apical soft or hard tissue.

Treatment.

Remove the filling and neutralize the drug effects by the use of Dacon's soln. campho-phenique etc. This may take considerable time and a wide variety of drugs.

If too much tissue has been destroyed it may be necessary to extract the tooth.

2. Infection.

The infection beyond the end of the root may not clear up. This may include the peridental membrane, apical hard or soft tissue.

A small portion of the root canal may not have been filled and the serum which collected in this small space become infected.

Any of these infected areas will be sufficient to cause pain.

Treatment.

Clean out the canal and endeavour to clean up the infection by the use of drugs and dressings.

It may be necessary to perform an apioectomy or curettment, or even to extract the tooth.

3. Traumatism.

The root canal filling may have gone past the apex of the tooth and be causing irritation of the apical tissues.

The tooth may be in traumatic occlusion.

Treatment.

Correct the mechanical error of the filling or the occlusion, or perform an apioectomy.

Full Denture Construction

DENTAL CLINIC CONDUCTED AT LONDON, ONT., BY DR. FRENCH OF OTTAWA

Conducted under the extra-mural plan of the University of Toronto and directed locally by the London Dental Society with the co-operation of the University of Western Ontario, a dental clinic was conducted recently in the chemistry amphitheatre of the University of Western Ontario, and after a luncheon meeting, held in the evening, followed by still further clinical discussion in the Tecumseh House.

Dr. Felix A. French, Ottawa, was the special demonstrator and speaker for all sessions of the clinic. He demonstrated full denture work under the system adopted by Rudolph E. Hanau, Buffalo, who has, by means of careful analyses of the human mouth and a close study of

the motions of the jaws and the functions of the different movements involved in mastication and speech, brought before the dental world a new viewpoint of what is necessary for a dentist to consider in order to make dentures which will give comfort and satisfaction to the patient and at the same time be in complete harmony with the particular type of face and set-up of teeth of the patient.

Takes Impression

At the afternoon session, Dr. French took impressions in the case of individuals who have worn dentures for some six months or so, and in general, had fairly satisfactory results with their plates. By the methods used by Hanau, including

the use of the articulator, an instrument constructed with scientific precision and adjustable to meet the measurements of different mouth formations, Dr. French discovered the sets at present worn by the patients were out in some respects. He demonstrated how these defects could be remedied, in some instances, and in others pointed out what was necessary to have in mind to avoid having them occur. Dr. Hanau's method of taking the impressions stresses the importance of making use of the various movements which the jaws undergo in their regular work, whether of eating, laughing, speaking or what not, in making the denture and using what is called the muscle trimmed impressions.

At the evening session Dr. French gave an instructive talk, illustrated by models and also by lantern slides, showing the general principles underlying Dr. Hanau's method of taking impressions, and the laws which he has set forth as being the ones which must be understood by the practitioner in order to successfully cope with the many problems which arise in deciding what work must be done to bring about a satisfactory piece of work for each patient.

Dr. French showed the completed denture the second morning.

Many Attend

Dentists were present from a number of points in Western Ontario. Among those in attendance at the clinic were: Dr. T. F. Campbell, Galt, president of the Ontario Dental Association; Dr. E. Bruce, Kincardine, ex-member of the board of directors; Dr. S. M. Kennedy, London, present member of the board of directors.

Dr. George Howden, Watford, is president of the London Dental Society; Dr. S. A. Moore, secretary, and Drs. E. W. Fuller and J. F. Blair, members of the executive.

Dr. Bruce gave a short address, in which he urged the necessity of

the practitioners of dentistry taking more post-graduate work and doing everything in their power to have their office conditions favorable for the best service to their patients, and also the need and necessity of the members of the profession working together co-operatively to bring about the conditions which would enable them to render the maximum of service to the public. He spoke very highly of the abilities of Dr. Kennedy and of the efficient man he is on the board of directors. The speaker, however, warned against the danger of holding out the idea to high school students that there was a wide field for young dentists, but rather would he have such students realize that dentistry, like any other line of work, is subject to the law of supply and demand and the young men should realize promises of certain success financially in the work cannot be certain of realization.

Need of Teeth Care

Dr. Revell, Woodstock, strongly urged the desirability of the profession doing more to teach the public the need of giving the teeth proper attention. This was particularly important, he pointed out, in the case of the deciduous teeth, which are so frequently neglected by parents because they do not realize their importance to the future health of the child.

Upon motion of Drs. Moore and Lott, a committee consisting of the presidents of the local societies, and in districts where there is no society organized, a man to be appointed by President Howden, was appointed to consider the question of forming a Western Ontario Dental Association for the portion of the province west of Hamilton.

Drs. Gumar and L. W. Savage, St. Thomas; H. L. Smith, Windsor; R. C. MacLaughlin, Paris, and others, spoke briefly, in which they ex-

pressed their appreciation of the value of the clinic which had been arranged. Dr. Gumar has had the honor of being a practicing dentist for 53 years and has been in Kin-

cardine for over 51 years. He gave a reminiscent talk of the experiences he had in London when there were but four or five practicing dentists in the city.

The Symptom of Pain in Dental Practice

By PROF. W. H. GILMOUR, LL.D., M.D.S., L.D.S.*

The subject of my paper, whilst admittedly my own choice and one that I have had in my mind and have been very keen on for a long period, I find, nevertheless, very difficult to write. (1) "Health means harmonious action of the entire economy. Conversely, ill health means disharmony. The first evidence of a departure from health may be psychic; some change in disposition, or an increasing consciousness of some part, varying from mere discomfort to actual pain. In various ways, and increasingly evident to those who direct attention to an evaluation of its manifestations, the nervous system plays a part in the majority if not in all the morbid entities with which the physician is called upon to deal."

In trying to make oneself familiar with the scientific aspect of the nervous system one finds the subject more and more complex, nor does it appear to be definitely fixed or known as to the force or energy or manner in which impulses and sensations which include pain and pleasure are conveyed. It would appear to be generally acknowledged, however, that there are different nerves or systems conveying different impressions and that in the brain these are sorted out, recorded, interpreted, co-ordinated and counteracted. As Behan (2) puts it, "We may be said to have three states of sensory mental activities, namely, pain, indifference and pleasure."

Another difficulty is to define pain. It is a symptom but how induced and by what force is difficult enough, perhaps, for a special pathologist and neurologist to describe. It is acknowledged to be a symptom of a protective character. Certain symptoms or sensations are in some cases pleasurable, but if they are pushed too far as, say, in pressure they may become painful. An embrace may be pleasurable, a vigorous hug otherwise. Whilst pain and pleasure appear to be the antithesis of one another they cannot be said to correct one another. (2) "Pain is distinctly a mental interpretation, and cannot be strictly defined. It is the interpretation, of some abnormal and generally harmful process which is occurring in the organism. It cannot be classed as a sensation, but rather is the result of the perception and interpretation of sensation by the discussion of its antithesis, pleasure, since the two are intimately connected in their perception and in their interpretation. Both are the result of mental activity," (3) "Pain is the oldest defensive reaction, and potentially painful stimuli are the basis of all primitive reflexes."

Again pain is relative. For example, in one person perhaps owing to temperament, worry, fear, or to the lowering of general tone a very little cause may create a very severe reflex. In another who possesses perhaps more control a gross cause may appear to give relatively small external indica-

tion of its intensity. (Hurst 4)

"An individual may be unusually sensitive to pain owing to his inherited mental characteristics, or he may become so owing to exhaustion, insomnia, and sepsis, and the demoralization which prolonged and excessive pain may induce."

How is one to know what degree of pain either of these types is suffering? Fortunately it is impossible for oneself to feel the pain or to practically visualize it. If you have had severe pain you may have a standard of your own and be more able to assess it. For those who have never had pain it is impossible.

Greater pain may make one unconscious of a lesser pain. Pleasant environment or intense occupation may also for a time render one partially unconscious to pain. Further it would appear that those who suffer a great deal of pain are in time able to stand a greater degree of pain, and such people may only give way to external evidence of it when it ascends above their bearable average. (Hurst 4) "It is a matter of common experience that pain is increased by attention and diminished by inattention. In all probability individual variations in sensibility to pain depend largely upon the varying ease with which the attention can be diverted by an effort of will from the seat of pain."

There is no standard from which we can measure its degree even if one has suffered pain oneself. Apart, therefore from the knowledge we gain and that through experience from the symptoms described by the patient, the location of the pain, the area in which the pain may be referred, the type of pain, one cannot otherwise assess the degree. If, for example, one patient may state that he is suffering pain, in fact, he need hardly say so for he is giving very definite external evidence by the shedding of tears, moaning or screaming or flushing, sweating or muscular spasms for fear of being touched, paroxysmal reflexes and yet on examination the cause of

it may appear to be very slight. On the other hand another patient may state that he is in excruciating pain but of which he is holding himself in control and be giving very little evidence that he is really suffering. One point I wish particularly to express and impress is that, if a patient complains of pain, do not dismiss the complaint lightly even when after examination little or no evidence of its origin can be found. This point is stressed by many writers. For example Behan '2) states, "While in many cases a patient may seem to be complaining of pain in order that he may arouse the sympathy of those interested, we, as examining physicians, should not conclude because we are unable to find an organic basis for the pain that it does not exist. The diagnosis of hysterical pain is often but a cloak under which the physician hides his ignorance. When we consider that the nervous system is of considerable volume and weighs about six pounds, and that it is subject to the same variations of nutrition and change as are the other tissues of the body, it is easy to appreciate how it may be subject to the vicissitudes of the other tissues, and therefore subject to irritation and fatigue, the same as are these tissues." Behan submits the following schematic illustration showing how the various sensations are transmitted, received, interpreted and recorded.

To my students I prefer, perhaps wrongly, to use the simile of the modern telephone system, not so much perhaps unlike Behan's comparing the brain to the central office or depot where the various signals are noted, correlated or co-ordinated and in consequence the means adopted to correct them if they are harmful. The various wires pass to the central indicator, or if there is a large area covered, through sub-stations which may be compared to ganglia, to the particular area and then to the individual telephone number. Supposing the telephone to represent a tooth, and

the patient says, "I have pain in this or that tooth", and on examination no lesion is found and no cause, still it does not alter the fact that the particular communication in the central office is recording the signal from that one tooth. If on the telephone a certain individual number or indicator keeps ringing the central office assumes that it is that particular number that is ringing and causing the disturbance, and yet perhaps on enquiry finds that that particular individual is not calling or ringing. Something has happened on the line and the indicator still responds and unless the fault is removed or the cause when known accounted for, the central office will still assume that it is that individual number calling, or it may be that the indicator in the central office is out of order. Using this analogy with regard to the body and its nerve supply if one can find the organic lesion at the point indicated and correct it, then all is well, or, at any rate, it is more satisfactory to the patient. If, on the other hand, it happens to be in the brain or central system then the matter is more serious. When no organic disturbance is found it is very little satisfaction to the patient to be told that there is nothing organically wrong, and that the patient must therefore be imagining the occurrence of pain, for as far as the patient is concerned if the brain records the symptoms of pain it is just as real to them either way. From the clinician's point of view, if he can discover the cause either at the point indicated or along the line of communication, it is much more favourable. Both need to be relieved. It is of no use the clinician assuming because he cannot find an organic lesion that there is no pain and suggest that the patient is neurasthenic, neurotic or hysterical.

(Behan 2) "Hysteria probably includes the largest number of subjective pains. It is only recently that hysteria has been recognized as an entity, and as a disease worthy of the

most painstaking attention. Heretofore, when a patient complained of pain, and no objective lesion was found, he was dismissed with the diagnosis of hysteria; but this did not always prevent death from the disease with which he was suffering."

"That some change which accounts for the pain is present in hysteria cannot be doubted; and that the pains of hysteria are imaginary and have no basis is ridiculous."

(Hurst 4) "Hysterical pain is a very real thing, and cannot be distinguished from pain caused by organic disease by its character, or by the absence of associated sympathetic phenomena."

A noted judge in England in a quasi humorous vein remarked in a case, "That neurasthenia was a term invented by medical men to cover their ignorance and mystify their patients."

The patient records pain and however remote and difficult to diagnose if we fail to do so we must not blame the patient but rather take the view that great as our knowledge may be we are still ignorant and unable to ascertain the cause. If the patient records pain our first duty is to believe him, and even if we cannot discover the origin of it, treat the patient with sympathy, for it is astonishing at times what an amount of pain may be caused through very slight organic disturbance. Give the patient the benefit of the doubt.

Another point that has to be remembered is that (Hurst 4) "Painful impulses to the brain may persist after the primary cause of pain has been removed. The persistent pain is hysterical, being suggested by the original pain, and being curable by psychotherapy."

My experience, limited as it is, is confined to the clinical aspect of pain.

Now I do not know the dental conditions as applied to Holland, whether the Dutch suffer more or less from dental lesions than the British. I therefore, trust that you will forgive me when I relate conditions as applied

in my case to the experience gained in dental practice in England.

First and foremost there is little doubt that all pains associated with the head seem to be more painful and more trying than those affecting other parts of the body. It is a question whether earache, toothache or severe headache are the more terrible. Pain associated with nerves confined in bony canals or surrounded by hard tissue as in the pulp of the tooth appears more intense than that connected with nerves in soft tissue. With an arm or leg it seems possible to place it in a position of rest, or ease it, but with the head whatever movement is made the pain is carried with it. With the ordinary pain in connection with teeth you are all familiar and I need not dilate. It would appear to me that the pains in connection with affections of the pulp of a tooth are most severe and most paroxysmal owing to the fact that the tissues are confined in an absolutely unyielding box. The pains are very frequently referred, in fact unless by the repetition of occurring indications, the patient is frequently unaware of the particular tooth or pulp which is involved. My experience is that there is very little, if any, sense of location in the nerve supply to the pulp, nor would it appear to need any sense of location as in health it is thoroughly protected by hard tissues, and on its exposed side by the hardest tissue in the body, namely enamel. In anterior teeth patients appear to more readily locate pain than in posterior teeth. If there is no break in the continuity of the crown, of which the patient is aware, I doubt whether he could tell which tooth it was from bicuspid to molar till he becomes conscious by feeling a break in the continuity in the crown or the fact that food collects in the area causing pain and its removal eases the pain. Very frequently he is unable to distinguish between the anterior or posterior teeth in the maxilla or mandible, and very fre-

quently he is unable to distinguish its occurrence in either jaw.

If when operating it appeared to me that through fear of pain the patient's reflexes appeared to be assumed or exaggerated I not infrequently to test the patient would place the bur on another tooth without giving the patient any external evidence of the tooth I was touching, and in most such cases the response would be the same. On the other hand if I was working for a patient with more control and who disguised his responses I noted the pupil and in all cases, stoical as the patient may be if there was pain he was unable to control its contraction.

(Harris 5) "Dental neuralgia is one of the commonest and most painful forms. Exposed dentine is a common cause and may give rise to pain so fierce that it has been mistaken for trigeminal neuralgia."

It is very consoling and helpful in diagnosing to know that a dental neuralgia never crosses to the opposite side.

TEETH—"Sometimes, in cases of toothache, the aching may be due to hyperesthesia, a common accompaniment of pregnancy. Ordinary toothache is due to an irritation of one of the branches of the trigeminus by products of dental caries. At first the pain is more or less localized to the point of origin but it gradually may become so accentuated that a general neuralgia results, and the entire side of the face may become affected. This may increase until the entire side of the head and neck is tender and painful. This extension can be explained by the rich collateral association of the trigeminus with the cervical nerves. Because of this close relationship it is easy to understand how an excessive stimulation of one nerve can produce reactions in adjacent nerves. In some cases, after the extraction of teeth, pain may persist for several days.

"The most sensitive part of a tooth is the pulp and the agents causing the

greatest reaction are heat and cold. Head claims that, until the pulp is involved, the pain remains local, but as soon as it is affected the local is changed into referred pain....

The referred pain from involvement of the pulp cavity. It seems that each tooth has a separate area of pain reference; for instance

Not infrequently the patient complains of pain and the symptoms given are those associated definitely with a live pulp, but when asked to indicate the tooth he points to a very large cavity, in a tooth which is pulpless, of which he is conscious, or to some roots of a broken down tooth, neither of which could possibly give rise to the symptoms. The patient is unaware of a tooth in which there is a large interstitial cavity because there has been no break through the crown, but in which there is a cavity of such an extent as to involve the pulp and in order to prove that he is wrong and to convince him of its origin one has had to cause pain in the live tooth.

On the other hand pain arising from the periodontal membrane or the gingiva is readily located by the patient. There is a definite sense of location in the periodontal membrane and essentially so for this is the protective measure against overstrain or too great force in mastication on the tooth. Take the finest tooth powder made or one which feels perfectly smooth to the finger and place a little between the incisor teeth. The presence of grit will be very readily felt and magnified. Without the sense of touch and location to distinguish hardness damage to the teeth might occur, so that the sense in both cases is a protective measure, in one case to preserve the vitality of the tooth and in the other to prevent its fracture or destruction. Whilst the periodontal membrane gives rise to definite local symptoms, it, more than is supposed, may give rise to very definite reflexes but limited to the same side of the head.

Some years ago a relative of one of my students consulted me in reference to acute paroxysmal spasms of pain, muscular reflexes on the right side of the face from which he had suffered for a long period. He had a most distressed and frightened appearance and even whilst describing his symptoms had several terrifying spasms. These appeared to be induced in articulating certain words which brought the cheek in hard contact with the alveolus. Ultimately I was able to induce cries from the patient and spasm by touching even lightly a point on the inside of the cheek. He was wearing complete dentures, all teeth extracted except the roots of the upper incisors and canines which were filled and appeared fairly healthy. As in my opinion they were a menace to health and ought to be removed I doubted if their removal would ease his condition. They were extracted and to our united delight the paroxysms ceased.

The gingiva or gums are sensitive to touch, but unless pressure becomes great and of such a character as to damage it, it is not painful in health. When inflamed it is extremely painful, and the pain in such a case is, I submit, a protective measure to prevent the use of that portion and to allow of its physiological rest and recovery.

The types of cases I want particularly to illustrate are those in which reflexes are pronounced, but in which the cause is obscure.

IMPACTED TEETH. — For some years I have held classes during the last four or five months before the students take their final examination in order to teach the means of diagnosing and to discuss the treatment thereby indicated. After listening to the patient's history and symptoms, if he comes with pain, and from these symptoms broadly determining as to whether the pain arises from the pulp or periodontal membrane or surrounding soft tissue, and after the patient has indicated the point or area affected, the age is ascertained and the student is then asked to state what

would be the normal conditions as regards dentition he would expect to find at that particular age, so that when the mouth is opened for the patient to indicate the particular tooth or area affected the student may then examine the mouth and compare it with the normal at that particular age. He is then asked to indicate the more or less common variations in particular with regard to the number of teeth which might be present, and I have been tremendously struck with the vast number of cases in which the third molars are implicated as hidden sources of pain from the age of fifteen even to old age and edentulous cases, followed next by the pre-molars, particularly the lowers and afterwards by canines.

Presence of unerupted teeth in edentulous or nearly edentulous cases.

Some years ago when in practice an Irishman consulted me, and with his droll humour asked if I could make him a denture which he could wear, and immediately produced out of his pocket some seven or eight dentures which he had had made for him. The prognosis was not encouraging. All his teeth were missing except the two upper central incisors. These were very much elongated and I extracted them with a view to making a complete denture and getting better adhesion. Dentures were made and he said they were very comfortable, remaining so for some time. Then he complained of much pain on the right side and the denture was eventually eased to such an extent that it became useless, and I had to refuse to cut away any more, and he went back to the same state of discomfort. There was nothing evident. Some months after he suggested that he had cancer and on examining the spot with a probe (radiographs in those days were practically unknown) I discovered an unerupted canine trying to erupt. At this stage he did not want it extracted. Ultimately a cavity arose and pain occurred in the tooth itself and it was extracted in a horizontal

direction. After extraction the pain ceased, the dentures were modified and there was no further trouble. Much about the same period a lady was wearing full dentures. She had very similar symptoms of pain, nothing evident. Later on I discovered that she also had an unerupted canine. This was removed and she has worn her dentures for many years since.

Galvanic or Electric

Another source of pain not generally recognized is that arising out of galvanic action by the use of different metals or amalgams in one tooth and consequent disturbance of the pulp. The galvanic action between different metals in contiguous teeth and under certain circumstances when in contact with other fillings in opposing jaw, with metal dentures and even the introduction of a metal such as a spoon, or, in fact, a dental mirror. I find the modern types of amalgam fillings containing zinc are more prone to give rise to galvanic action.

My first attention to the possibilities of severe pain arising between different metals in the mouth I had in Bordeaux many years ago. The patient had a shell gold crown in the second upper premolar and I inserted an amalgam filling in a mesial interstitial cavity in the first molar. When trimming the latter the patient surprised me by starting and jumping up in the chair. I was at a loss to explain this as neither pulps were involved. Ultimately I found I could create the spasm at will by connecting the crown and filling with a plated spatula. The case was relieved by inserting a thin layer of varnished paper between the two.

Having had several of these experiences between two different types of amalgam fillings I requested Dr. Brislée to ascertain its possibilities and by experiment he found that an electric current up to half a volt or even more could be generated.

On one occasion I inserted for a patient an amalgam filling in the

mesial surface of a second upper molar, the first molar and second bicuspid were missing. Some time after he telephoned to say that the filling had come out because he had had pain in the tooth. When he attended I found, as I expected, the filling was "in situ", no change. He explained that the pain came on when he had soup. I tried heat and cold without result. After further questioning I discovered that he introduced the spoon so far back as to bring it into contact with the filling, and an electric shock resulted. This I could also cause by touching the filling with the back of the dental mirror. Patient advised not to introduce the spoon so far into the mouth — no recurrence.

Female aged about 40. This patient desired a partial upper denture. For the impression a cast metal tray and comp. were prepared. On its introduction the patient was thrown into a violent spasm of pain reflected to the base of the spine. My demonstrator unable to find any cause brought her to me. I found she had a fair number of filled teeth, upper and lower, some anteriorly (gold) rather large. Heat and cold were tried, in these nothing abnormal resulted. I then made metallic contact with a plated instrument between various fillings and eventually connected an amalgam filling (crown) in a lower molar with a gold filling in the centre of an upper molar. Immediately the patient cried out, arched back her body and gripped her hips. The spasm lasted for some minutes. I had the fillings removed and gutta percha inserted, and later filled with cement. The pain did not recur nor could I induce it. Both fillings were comparatively small, the lower amalgam, the upper gold inserted over an old copper amalgam. This latter combination I think mainly accounted for the exaggerated pain and spasms.

Pulp Stones

I have been particularly struck by the number of pulp stones one sees in examining films. The majority appear

to cause no pain—they are always suspicious. On the other hand they have been the cause of much referred pain which has been relieved by devitalizing the pulp and the removal of calcified content.

Antrum of Highmore

Gross affections of the antrum give referred pain in the posterior teeth on the affected side. But I have remarked that even very slight disturbance (hyperaemia) ignored by the medical man will give rise to severe toothache. This is hardly to be wondered at when one so often discovers in films the low level of the floor of the antrum in relation to the teeth and in which the nerves supplying the teeth are situated.

Temporo-Mandibular Joint

—Following multiple extractions with consequent loss of the normal occlusal plane I have had many cases of acute reflex pains in the ear and in the head. Sometimes the patient suggests even fracture or dislocation has occurred. This I have frequently found to be due to pressure on the back portion of the glenoid cavity and the stretching of ligament, and remedied by restoring the occlusal plane by dentures.

Another source of obscure pain is to be found arising from unevenly absorbed bone leaving ragged edges of either compact bone or softened areas, ultimately relieved by reflecting periosteum and paring the bone.

It is astonishing what an amount of pain over long periods may arise from minute spiculi of fractured roots almost invisible even in film.

The possibility of the inclusion of small fractured portions of fillings becoming involved during extraction in the socket of a tooth, particularly in the mandible, must not be overlooked.

This patient complained of neuralgia during a long period. Ultimately cured by the removal of the infinitesimal root marked.

CYST — *Edentulous Case*. Woman aged about 48, upper jaw edentulous.

Complained of pain of a neuralgic character affecting the whole of the left maxilla during a long period. Clinical examination revealed nothing. Ultimately radiographed and cyst revealed as shown.

Male aged 29. Complained of pain in right side of mandible. Consulted several medical men. Symptoms vague, with pain in the mental region. Had an idea he was developing cancer. Medical men were of the opinion that it was all imagination as there was nothing revealed by examination. Case came under the notice of the Radiographer (Mr. Roberts). The part was radiographed and the condition as shown in the film was discovered. (Note contact points).

Mrs. H. aged 29 years. Presented herself complaining of acute neuralgic pains on left side. Teeth present 4. 5. 7. 8. Small cavities in 8 and 4, not sufficient to give rise to such an acute condition. Lost weight rapidly due to pain. Radiographs disclosed a calcified body lying between 5 and 7. After removal of this body pain cured. Sections of this tissue revealed enamel, dentine and well marked cementum.

I expect you will have noted that I have only illustrated cases suggesting neuralgia of dental origin. I am pleased to say that it has been my good fortune not to have had many cases of true neuralgia (major) and as the subject is too big I have not referred to it. In such cases I have done my best to examine for dental origin and if not found they have been referred to the medical practitioner. I have noted, however, that the extraction of teeth is too readily resorted to in most cases with no relief and with rather added discomfort to the patient.

(Behan 2).

"Central trigeminus pain (tic douloureux), either from involvement of the ganglion itself or its internal roots, or as a result of pressure (cerebello-pontine angle, tumour, neuroma), often leads to a faulty diagnosis of

teeth pains. Many patients suffer the loss of one tooth after another in the vain search for the affected one. After the sacrifice of the teeth the dentist or physician wakes up to the fact that the disorder is central, and that a great mistake has been made."

Further I have not exhibited any slides showing exostosis of the roots of teeth. They are exceedingly common and are well known to be the source of neuralgia or referred pain.

Absorption of the roots is less common and the pain in such cases is more acute.

Rarified areas round the roots are again exceedingly common and well known to be both a menace to health and to give rise to referred pain.

In practice I never refused to immediately treat a patient in pain and always encouraged patients when they had pain to obtain relief if possible at the earliest moment for if relief is to be obtained why suffer a moment too long or why delay for matters to become more difficult to treat. I had less sympathy with a patient if for example he had had curable pain for about three months and expected to be cured in about three minutes.

If it were not for the symptom of pain or the fear of it occurring when the teeth and associated parts are damaged the dentist would have a lean time, and whilst I do not wish to be unkind I think it is a pity pain does not occur immediately caries commences. If it did patients would consult earlier and more teeth and pulps be thereby saved.

In conclusion may I sum up by remarking that the subject of my paper is one with which we are all familiar and its elimination calls forth our highest endeavour.

The relief of pain is a most humane calling and when successfully accomplished most gratifying to the clinician and certainly most pleasurably acceptable to the patient. In order, however, to bring it about the cause must be diagnosed. Here lies the difficulty.

(Continued on page 395)

SOCIETIES

EDMONTON DENTAL SOCIETY

The Edmonton Dental Society held the first of its meetings, after vacation, on Tues., Nov. 6th, in the MacDonald Hotel.

Dr. Bernard Mooney from the medical society presented an outline of the proposed scheme for a Medical Arts' Building to be erected in Edmonton and requested the co-operation of the dentists. A committee was appointed to go into the matter. The returning president Dr. Robt. Decker gave a brief resumé of the year's work, the success of which he attributed to that spirit of co-operation always noticed amongst the local men.

The election of officers for 1928-29 resulted in Dr. Alex Gemeroy, Pres.; Dr. Jas. Carmichael, Vice-Pres.; Dr. Nelson Haynes, Secty.-Treas.

MONTREAL DENTAL SOCIETY

Anatomy of the Head Demonstrated

Dr. A. L. Walsh, Dean Dental Faculty McGill University, spoke and demonstrated with human skull.

Dr. Walsh, Dean gave an interesting address on the "Anatomy of the Head," at a meeting, November 19th, of the Montreal Dental Assistant's Association held in the Dental Faculty.

This was the first clinic class of the season. Miss E. Moyer was chairman of the evening and Dr. Kerr, operated the lantern slides, shown during the last part of the lecture. Dr. Walsh dealt with his subject as closely as was possible considering the brevity of time. His points of interest were brought out very clearly by a practical demonstration on a skull. In closing, Dr. Walsh

turned from the subject of the skull to one of the most important aspects to consider in a Dentist's Assistant, that of cleanliness. He emphasized the necessity of sterilizing all instruments after usage and of neatness in work.

OTTAWA DENTAL SOCIETY

The activities of the Ottawa Dental Society opened here on Monday, November 19th with a dinner at the Daffodil, followed by a very interesting address on "The Endocrine Gland" by Dr. F. A. Clarkson of Toronto. Our society is always glad to welcome Dr. Clarkson as its guest as he invariably gives us very interesting talks and this occasion was no exception to the rule.

Expressions of sympathy were extended to Dr. R. M. Armstrong on his bereavement in the death of his brother, Col. J. Alex. Armstrong and to Dr. J. S. Girvin in the death of his mother.

The society was in receipt of a letter from the Ottawa Welfare Bureau asking our assistance in furnishing gratis, dentures to indigent patients, who will be recommended by their investigators. It was decided to co-operate with the Welfare Bureau and the secretary, Dr. A. W. Grace, was made the medium through whom the allotment of cases should be made.

Our society also went on record as favoring giving every possible assistance to the Royal Ottawa Sanitarium who requested that we be responsible for the manning of the Dental Clinics at that institution.

Details of this clinic will be arranged by a special committee appointed at this meeting.

W. Cue.

Dental Society of Western Canada

The executive for the 1929 meeting of the Dental Society of Western Canada to be held next June in Regina, is as follows:

President—Dr. Geo. L. Cameron, Swift Current; Vice-President—Dr. M. H. Garvin, Winnipeg; Dr. Leslie McIntyre, Edmonton, Gen. Secretary—Dr. C. W. Parker, Regina; Committee Chairmen: Programme—Dr. F. S. Van Woert; Clinics—Dr. L. J. D. Fasken; Publicity—Dr. M. R. Parker; Finance—Dr. C. W. Parker; Transportation—Dr. W. M. Blair; Hotels Arrangement—Dr. A. J. Brett; Entertainment—Dr. E. W. Mounteer; Exhibits—Dr. R. N. Grant; Advisory—Dr. W. D. Cowan.

Preliminary Announcement

The Dental Society of Western Canada includes the provinces of Manitoba, Saskatchewan and Alberta working under one constitution and backed financially by the three provinces.

The Regina Dental Society is arranging the programme for the next convention and asks the co-operation of all the other Dental Societies in the three provinces. This convention which comes but once in every two years will be held in Regina, Saskatchewan, on June 6, 7 and 8th, 1929. Every committee is hard at work selecting and securing the best demonstrators and clinicians. All we need is the support of every dentist in the three provinces and a good attendance. Try and plan a motor trip and visit Regina next June 6, 7 and 8.

We will do our best to entertain you while you are here. Bring your car and see Regina, "The Queen City of the Plains." Mark off these dates on your appointment book now and we will forward you particulars of our progress later.

Max Parker

Chairman of Publicity.

Canadian Dental Association

The Canadian Dental Association will amalgamate with the Western Canada Dental Society in convention at Regina June 6, 7 and 8, 1929, according to the announcement made last evening at a dinner of the Regina Dental Society, given in honor of Dr. Fred R. Felcher, of Chicago, who held a clinic during the day on modern dental porcelains. Some 500 dentists are expected.

Dr. George L. Cameron of Swift Current will preside at joint sessions of the dental bodies, at which it is expected that there will be about 500 practitioners present.

Business sessions of the Canadian Dental Association will be presided over by Dr. Conboy of Toronto.

This will be the third session of the Canadian Dental Society held in Western Canada.

Simplified Maxillary Anesthesia

BY SAMUEL D. HARTSTEIN, D.D.S., BROOKLYN, N.Y.

A Clinical Case Report

It is with a great deal of pleasure that I give the report of a clinical case that presented at the Greenpoint Hospital in which I made a tuberosity injection for the extraction of the maxillary right cuspid, second bicuspid and second molar. The patient, Mrs. E., about 30 years old, seemed to be of a nervous temperament. The above-mentioned teeth were the only ones remaining in the maxilla and were immovable when grasped with the fingers.

Iodin was first applied to the tissue at the point of insertion. I employed a glass syringe and a straight needle, 1½ inches long, 21-gauge. I held the syringe in a penlike manner and inserted the needle into the reflection of the mucous membrane in line with the beginning of the posterior third of the second molar (in this case), the syringe being at about an angle of 45° to the occlusal surfaces of the maxillary molar and bicuspid teeth, and the side of the needle and barrel of the syringe being parallel to the alveolar plate. At the point of insertion I deposited a few drops of the solution. Then, after passing the needle further posteriorly, slightly beyond the tuberosity, I again deposited a few drops. Drawing the barrel of the syringe outward as far as the corner of the mouth would allow, and withdrawing the index finger of my left hand, which had been retracting the cheek, I was able to bring the barrel of the syringe farther out and so the point of the needle was brought closer to the zygomatic surface of the maxilla. Here I deposited slightly more of the solution than before. From here on, the needle was inserted superiorly and interiorly, and after the needle was practically seven-

eighths imbedded, the remaining solution was deposited.

At exactly 11:02½ I made the tuberosity injection and at 11:06 I found that I had obtained anesthesia buccally and lingually of the second molar and second bicuspid and lingually of the cuspid.

After having satisfied myself as far as the anesthesia was concerned, I grasped the second molar with the forceps and the patient uttered a cry. I removed the forceps and questioned her; she claimed that she had felt pain. Knowing her to be of nervous temperament, and noticing that she did not seem to be able to distinguish between pain and pressure, I explained that when a tooth was extracted she naturally would feel some pressure during its removal, which she must not mistake for pain. She also feared the breaking of the tooth and had asked me to be very careful in its extraction. While making the injection, I was compelled to ask her to relax the lips and cheeks, after which I was able to make it more easily, thus proving that she was under a great strain because of fear of pain.

Having gained her confidence, I extracted the second molar. On inquiring if she had experienced any pain, she answered that she had felt only the tooth coming out. I then extracted the second bicuspid, and she repeated the remark. As the cuspid was being extracted, the patient made a response as if she had felt pain, but again on being questioned answered definitely that she had had no pain whatever, but felt only the tooth being removed. The cuspid root was found to be very long, with a small granuloma attached to its apex. There was very little bleeding as the result of these three

extractions; in fact, less than I have ever seen in my dental experience for maxillary tooth extraction. In the aforesaid operation I used 3 c.c. of solution.

On December 26, 1925, for a patient in my private practice I obtained a perfect anesthesia of one half of the jaw, both buccally and lingually, including the central incisor, and found to my surprise anesthesia of the adjoining central, buccally only, for about a minute. The next minute the anesthesia was gone. I have obtained maxillary anesthesia of one half of the jaw by the improved tuberosity injection with a 1½-inch straight needle. I have made single extractions both in the hospital and in my private practice with tuberosity injections, where I obtained anesthesia buccally and lingually of third molars, second molars, and first molars; and for other patients having more than one extraction, with a single tuberos-

ity injection, of second and third molars; of second and first molars; and of second bicuspid and first and second molars.

This case report is the largest area I have covered in extractions, up to the cuspid tooth, with a tuberosity injection only, and I hope in the near future, when a case presents, to extract the central and lateral teeth also.

I am of the opinion that I was the first one to obtain with an ordinary 1½-inch straight needle maxillary anesthesia of one half of the jaw from third molar to central, inclusive, by the single improved tuberosity injection and with slightly less than 1 c.c. of solution. Dr. A. E. Smith employed a needle with an extension hub, and Dr. Mendel Nevin's modified method was with a needle mounted on a right-angle attachment.

250 Havemeyer Street.

Children's Teeth—How to Use and Keep Them

Parents Should Set an Example to Their Children

Beginning with the teething period a child should be given a chicken leg or thigh bone (without meat on it) and hard dry crusts of bread made from whole grain flour. This accustoms it to using its jaws on hard foods.

From the very first spoonful of food given it, the child should be fed slowly and encouraged to chew. The cereals and breads must be masticated thoroughly in order to be digested.

After weaning do not feed the child entirely on soft or soaked foods.

As soon as the first temporary molars erupt, hard toast or zwiebach

(buttered) should be given at least with one meal each day.

Do not allow any child to hurry while eating a meal. Hurry prevents proper mastication and digestion. Make the child sit at the table at least twenty minutes.

The parents must be eternally vigilant in encouraging their child to masticate its food sufficiently. There is nothing more important to the health and development of the growing child than the proper preparation, digestion and assimilation of food. Thorough mastication greatly aids these processes.

Should both sides of the jaws be used for masticating food?

Yes. It helps in the equal development of both sides of the head.

Is the daily cleansing of the mouth and teeth necessary?

Yes. There is danger to the teeth and gums and to the general health if the mouth is not kept clean. An unclean mouth is like a hotbed with fermenting and decomposing food for soil.

How may the baby's mouth be kept clean?

The baby's mouth should be let alone until the first teeth come in. The mother's breast should be cleansed during the nursing period with cool boiled water.

How should the erupting teeth be kept clean?

A piece of clean gauze or cotton wrapped around the mother's finger and dipped in a normal salt solution should be used to swab out the mouth and to cleanse the first few teeth that erupt.

Normal salt solution—half level teaspoonful of salt to one glass cool boiled water.

How often should the teeth be cleansed?

After each meal.

Should parts other than the teeth be cleansed?

Yes, the gums, roof of the mouth, tongue and inside of cheeks and lips.

How soon may a toothbrush be used?

As soon as the first eight teeth are fully erupted, a very tiny, soft bristle brush may be used, before cleansing with the gauze or cotton.

What dentifrice should be used with the brush?

Normal salt solution. After the age of two, if desired, an unmedicated toothpaste may be used.

When may the cleansing of the mouth and teeth be done entirely with a small brush?

When all twenty of the deciduous teeth are in place.

In what manner should the teeth be brushed?

There are three good methods of brushing the teeth and gums. For brushing the deciduous teeth the circular stroke method is effective and is easily learned.

To brush the teeth and gums with the circular stroke method, place the brush inside the cheek and with the bristle end touching the teeth. Almost close the teeth and then, with a quick, light stroke in a round and round (circular) direction, brush the cheek and lip side of both upper and lower teeth.

For the tongue side of the teeth place the bristle ends of the brush on the teeth and with a quick, light, in and out stroke brush the gums and teeth of the upper and then of the lower jaw.

The occlusal or grinding surfaces of the teeth may be brushed with an in and out and a side to side stroke of the brush. Cleanse the tongue by brushing it with two or three light strokes.

A second good method of brushing the teeth is known as the rolling stroke method. To brush the teeth and gums with this method place the toothbrush ends of the bristles *up* for the upper teeth, between the cheek and the gums; turn the brush toward the gums, sweeping the bristles *down* over the gums and teeth to the cutting edges of the teeth. Reverse for the lower teeth and brush *up*.

This motion brushes the cheek side of all teeth and the tongue side of the back teeth.

Brush the inside of the front teeth by putting the brush, bristles *up*, on the roof of the mouth for the upper teeth and on the floor of the mouth for the lower teeth and pulling the brush outward over the gums and teeth.

Editorial

Editor:

A. E. WEBSTER, M.D., D.D.S., M.D.S., Toronto, Canada.

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VOL. XL

TORONTO, DECEMBER, 1928

No. 12

Talking About Good Fellowship

When one hears dentists of the same town or city talking in a public way about the good feeling and good fellowship existing among them, one wonders why all the talk. Is good fellowship among dentists so strange or unusual that when it appears to exist that it should be remarked upon? Or does the speaker take the opportunity of the protection of a professional meeting to plaster someone up whom he has wronged? Such expressions of good fellowship remind one of the peace talk among the European nations. If they are all for peace, as they say they are, why talk about it? It is like certain classes of Canadians who are constantly declaring their loyalty to the crown. If they are loyal, let it go at that. It is like the man who has paid too much for a second-hand motor car and tries to get his friends to praise the flivver and thus salve his conscience. Whistling to keep his courage up. When dentists talk at their local meetings, when strangers are present, about the good fellowship which exists there is something wrong.

What Comes Hard Goes Hard

As we read from day to day the wonderfully prepared stuff on health appearing in the daily and weekly papers and magazines, we wonder why any of us should be ill at all, these writings are so convincing. The whole story is told of just how decayed teeth cause angina pectoris or pernicious anaemia. The most recent views on dental caries are broadcasted. Tons of tooth pastes and barrels of mouth washes all carry with them a means of curing dental ills and worse general diseases. It has been said so often in the press that bad diet is the cause of dental disease, and that proper diet will prevent it, that there is a danger of the people who read and listen to lectures will believe that a few sprigs of lettuce and a drink of milk will save their teeth. The impression goes abroad that eating a balanced diet for a few weeks will work wonders in a diseased mouth, even though an unbalanced diet has been eaten for generations, and for forty years in a given case. What it has taken hundreds of years and thousands of generations to develop or produce, cannot be changed by one feed of liver or a drink of orange juice. Decay of the teeth doesn't come on over night, nor does pneumonia attack us in the twinkle of an eye. Something has happened before the actual microbic attack takes place. When nature rids herself of the organisms of a disease, she still has the job of protecting herself from another attack. A disease which only manifests itself after years and generations of attack, is not likely to be cured by some simple remedy, such as, eating a mess of spinach. Dental caries has increased among the people of this world but slowly, and will be overcome but slowly, so when dentists begin to pose as philanthropists because they tell the people how to prevent their teeth from decaying, and thus commit professional suicide, they have little to fear.

NOTES

There is a kind of general hint thrown out by the Burlington Gazette that perhaps dentists miss a good number of cavities in children's teeth. This is a rather serious matter because teeth which are thus neglected often become a serious menace for life. Every dentist knows the history, caries, pulpitis, pericementitis, osteomyelitis, abscess, granuloma, cyst, focal infection, rheumatism, kidney, heart disease, exit.

A dentist in private practice in Calgary told the board that the dentistry done for the school children is hurried too much to give the best service.

A death under nitrous oxide gas occurred in a dentist's chair in Montreal, Nov. 16, 1928. Coroner rendered verdict of accidental death from cardio pulmonary syncope.

Dental Night

A night unique in Woodstock Masonic circles was held on Tuesday evening, when the meeting was placed in charge of members of the dental profession from all parts of the district. Those present included Junior Deacon Dr. A. McQueen, Tillsonburg; Dr. W. McGuire, Simcoe, and Dr. Moles, Norwich. Brief addresses were given by these three, Dr. McGuire speaking as Ontario representative on the Dominion Council of the Dental Association.

The Canadian Dental Association presented a wreath at the war memorial ceremonies on Thanksgiving Day at the University of Toronto.

Dentists hold that the early symptoms of pyorrhoea can be recognized in time to hold the disease in check.

"If I were asked to give women everywhere what I regard as the most essential bit of health and beauty advice I know," says Gladys McConnell, favorite screen ingenue, "I would say, exercise your teeth no matter what else you neglect."

Peel County, Ontario, Women's Institute, upon getting a report that it would cost \$800 to give 3 or 4 months dental service, decided to drop the care of children now here for those yet unborn.

CORRESPONDENCE

Nasal Discharge

Dear Dr. Webster:—

May I have your advice on another case, please?

Patient is a young lady about 27. She has two upper left molars crowned with gold with a bar extension holding a dummy lateral. She is troubled with discharges in nose and throat, something like a chronic "cold" or catarrhal condition but has never had a free discharge of pus in the area. The molars are not sore to bite on nor to percussion and there is no evidence of inflammation around them.

I intended to remove the extension and make a more respectable one tooth bridge but would like to get the more serious trouble cleared up too. Do you think it possible that removing the leverage would cure the whole trouble?

Nov. 16, 1928. Yours very truly

Dear Doctor:—

I do not think the chronic discharge will be relieved by removing the extension. I am unable to make out the meaning of the large areas of rarefaction about the ends of the roots. The third molar may be the cause of trouble. Remove the extension and note what happens. If it continues have another picture at a different angle.

Yours truly,



Drug Irritation

Dear Doctor Webster:—

Attached herewith is X-Ray picture of an upper lateral through apex of which a considerable amount of oxpara root canal filling material has been forced under pressure of unvulcanized rubber under a root canal plugger.

The history of the case is as follows. Sometime in latter part of



September patient had an acute alveolar abscess at apex of the left upper lateral, an opening was made on lingual through inlay and drainage was established. Opening on lingual was left unclosed. October 27 patient presented with discomfort again at apex. Drainage was established with breaches and discharge absorbed with cotton points until root canal could be kept fairly dry when formocresol was sealed in on cotton points. October 29 patient presented for treatment upon withdrawing cotton point with formocresol placed two days previously, putrescent odour was quite evident and a discharge was collected on absorbent points inserted into the canal. After drying canal fairly well a treatment of creosote was sealed into the canal. November 2nd old treatment was withdrawn and putrescent

odour has practically disappeared and discharge practically dried up. Creosote treatment renewed for a four day period. November 6 root canal opened up, no putrescent odour occurred and fresh cotton points inserted into canals showed serum very slightly on two or three points. Caulk's Eutene was sealed into canal until Nov. 8th when upon opening the tooth no odour occurred and no serum appeared on fresh absorbent points. Root canal was filled with oxpara under pressure on unvulcanized rubber. Discomfort has been experienced continually practically since root was filled. X-Ray pictures taken yesterday revealed bulk of root filling through apex. Counter irritants locally over apex have been applied and Anacin tablets internally to control the discomfort.

Patient is male, approximately 40 years of age. Normally healthy, engaged in office work. Practically all lower teeth in position, upper right second bicuspid and first molar absent, also upper left first molar.

Patient is suffering considerable discomfort and is very anxious that something be done right away to relieve the condition. I have advocated tolerating discomfort for period up to time of X-Ray picture being taken but feel now that bulk of filling material too great to be absorbed and have decided now between two procedures, namely extraction of the tooth or opening down on the apex from the labial and removing the irritating material and avoid extraction thereby.

From the X-Ray picture and the tenderness of the tissues of the apex under palpation it would seem that there is considerable inflammation of osseous as well as the soft tissues there.

Would you kindly advise me Doctor what you consider the proper procedure to follow in this particular case and type of anaesthesia if any in either of the procedures which I have considered. Trusting to hear from you at your convenience and wishing you the best of health and success in your undertaking. I remain, Yours very respectfully,

Nov. 16, 1928.

Dear Doctor:—

I would use Local Anaesthesia and open over the root end and curette the cavity clear of the oxpara, the Formaldehyde of which has caused the irritation.

Yours truly,
A. E. Webster.
Nov. 14, 1928.

Gingival Irritation From Silicate

Nov. 7, 1928.

Dear Dr. Webster:—

Could you give me a little help for a case I have? The patient had a silicate filling inserted about two years ago, at the gingival of an upper cuspid. Since then, the gum has grown down to completely cover the filling. It is inflamed and slightly swollen. She is afraid that something malignant will develop. I could feel that the filling was quite rough and smoothed it off as well as I could. Would it be safe to lance the gum and refill the cavity? If this is done is there any possibility of a greater regrowth of tissue?

The patient does not suffer any pain from it, and there is no infection.

I would appreciate very much if you could assist me with this case.

Thanking you in advance.

Yours sincerely,

Dear Doctor:—

Your letter of Nov. 7th to hand. The hypotrophic gum is due to the irritation of the filling and the margins of the cavity. I would be inclined to cut the gum away which overlaps the filling and insert a gold inlay or gold foil which can be polished perfectly smooth.

Yours truly,

Painless Swelling

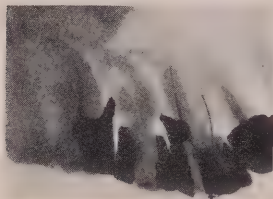
Nov. 9th, 1928.

Dr. A. E. Webster,
R.C.D.S., Toronto.
Dear Dr. Webster:

I am a graduate of R.C.D.S.—being a member of the class which graduated in 1923—and am taking the liberty of forwarding X-Rays of a case which I have at the present time.

The patient—a man of 38 years of age—is in good health. The upper right lateral was extracted several years ago. At intervals during the past two or three years there has been quite marked infiltration of the gingivae in the region extending from the open of right upper central to right upper cuspid. This is not accompanied by pain, even under

pressure, and no inconvenience or discomfort whatsoever. In August, while in Toronto, the patient consulted the dentist who attended to him while he was living in that city. The X-rays were taken at that time. The dentist told him after examina-



tion of the X-Rays that opening through the socket of the Right Lateral, curretting the area of infection that the condition would clear up. This was done at that time but there appears to be no improvement in the condition.

I feel inclined to advise a much

more radical procedure—that is the extraction of the Central and the Cuspid. I shall feel very grateful if you can give me your valuable advice for my guidance in handling this case as well as any other of a like nature which may present themselves.

Thanking you. I am

Yours very truly,

Stanley K. Donald.

Nov. 13, 1928.

Dear Dr. Donald:—

I notice that the radiograms are of a Mrs. J. Davidson, while the patient is a man of thirty-eight years of age.

I believe you are correct in attacking the case more vigorously than by the former dentist. The loss of the Central with the bridge attached is inevitable. The cuspid may not need to be lost if the pulp is yet alive and an exploration during the operation indicates that the apex is not involved.

Yours truly.

Pain Without Swelling

Nov. 3, 1928.

Dear Doctor Webster:—

I would like to ask your opinion and advice on the following case.

Young man, twenty-five years of age, in good health. All upper teeth extracted six years ago; lower left second bicuspid and first molar and lower right first and second bicuspid and first molar extracted at same time. Remaining lower teeth in excellent condition, a small amalgam in each of lower second molars. No inflammation or recession of gums.

Patient complains of dull pain in lower jaw, which seems to become worse if he gets overheated at work; never severe pain but disagreeable; also complains of salty taste in mouth especially in mornings. Slight

soreness to pressure in region of Submaxillary gland.

Claims that he had same feeling and taste in upper jaw previous to extraction of upper teeth but they were all badly decayed.

I would very much appreciate your advice on the case.

Thanking you.

Sincerely,

Toronto, Nov. 8th, 1928.

Dear Doctor:—

The case you have cited offers considerable diagnostic difficulty due to the indefinite and meagre symptoms. The peculiar salty taste present offers, in my opinion, little or no aid to the solution of the case. The prevalent soreness in the sub-

maxillary region might intimate an obstruction of the duct. This could be ascertained by careful investigation, palpating to disclose a slight enlargement of the gland, if present. Have you considered the possibility of impacted third molars. If they haven't been removed an X-Ray of this region would undoubtedly be advisable. If this should fail to offer a clue, I would suggest that you X-ray the remaining teeth and jaw. There might possibly be a root fragment from the previous extraction, or the presence of pulp stones would cause such a pain. Such an obstruction in the root canal would be very slow in progression and would tend

to obstruct the circulation. This would cause a pressure on the nerve, becoming more noticeable with increased circulation thus intensifying the pain at certain times. In a case such as this where the patient is unable to definitely localize the pain, the source of trouble is liable to be in either jaw with the remote possibility that it is even more deeply seated for instance, Antrum trouble. If you have considered these possible causes and found no apparent abnormality, I doubt if the teeth have anything to do with the conditions mentioned. A further examination of the case would then fall under the physician's domain.

Vaccines

Dr. A. E. Webster,
240 College St., Toronto.
Dear Doctor:—

What has your experience made you think of Inava Endocorps Vaccine? I have a case on now that would as far as the literature I have read on it make me try it, but before this I thought I would write you for your view point on it. I notice a lot of the best men have given it quite a good recommendation, if this is true then why is it not used to a greater extent?

At the time of the last meeting of the Ontario Dental Convention one of the clinicians spoke very highly of a new drug Hexylresorcinal Solution S.T. 37. In your opinion does it merit any confidence? I have an increasing number of young patients that on presenting for examination have numerous cavities each time. I was wondering if I could use it to advantage in their case.

Yours very truly, G. L. Prestien.

Dear Dr. Prestien:—

I have had no experience with Inava Endocorps Vaccine. I am not sure that this is the Vaccine which was originated in Paris some years ago and promoted in Canada by prominent Montreal Dentists. On the whole, Vaccines in Dentistry have been a total failure. A good deal of experimentation was reported to the Academy of Peridontia a couple of years ago by Dr. Isador Hirschfeld.

The other question you ask about is a means of treating Dental Caries by external medication. The work done on this subject was by W. R. Bunting, Ann Arbor.

Personally I have seen very splendid results from Metaphen followed by Hexylresorcinal. The Dental library could supply you with literature if you do not happen to have "The Cosmos" or "The National Journal."

Yours truly,

Dr. A. E. Webster,
R.C.D.S., Toronto.

Dear Dr. Webster:—

This is one of those dirty wet days when no one is out who can stay in so I have been doing some reading and some thinking.

I came across an article in a recent journal written by some fellow in Santa Ana on just cleaning teeth in spare time; or time that would otherwise be spared. This fellow's idea was to bring down the cost per office hour, not to increase the income per hour. Then on top of that I read an article in the last D.D.J. by H. D. Morris that will come along this line. The whole thing is on the line of Brother Bill's letters.

I often wonder how many of the fellows in the smaller towns like myself know how much it costs them to do any certain operation. Do they know how many office hours they put in in a year and how many income hours they have out of that; have they any idea of how to change at least some of those office hours into income hours. I must confess that I have a poor idea of it myself and am going to try to find out something on this line in my own practise. I have been at it for a week and will give you an idea of how I am going at it; that is to get a general line up on per hour costs and income, how to make the income hours more in number and more profitable. This will be for my own office only and not a fair average. I had an idea that if the scheme has any merit you would be the best man to get some of the other boys interested to keep records for a year when we might get something worth while out of it. A great deal of the material in journals on this subject seems to fit the city and not the smaller places. We fellows in the small town have to live too much to ourselves I imagine.

The records I have been keeping for the last 7 days are under the following heads: office hours (time I am in

the office), income hours (time I am engaged in the actual performance of any operation in the mouth, or on plate, inlay, etc. in the lab.). Then I am keeping a record of the time spent at the different operations and the fee charged for each one. From this I intend to strike an average and see where it comes out.

For example in the last 7 days I was in the office 49½ hours that is office time, I worked at the chair or in the lab. 22 hours that is supposed to be income time, this included 105 minutes of consultation for which I got no direct return. Cleaning gave \$4.50 per hour, amalgam \$5.55, cement \$3.00, enamel \$5.10, extraction (local injection or nerve block) \$5.00, gas and ext. \$15.00 I estimated 250 days for the year with a cost of \$1,800.00, making the cost per office hour of about \$1.00 We will say that we want \$4,000 out of the office; then we have to get \$23.00 per office day, how can we play the game to make say 5 income hours on the average bring this in?

I imagine you will get the idea even though poorly put. Do you think any benefit could be had from a few of the boys going at it on lines of this kind? It would mean some time spent and would have to be carried out for a year to be of any use. Then it would have to be done by a number to strike a fair average.

I think the average dentist holds himself, professionally, too cheap. Why should it be that I hand out professional advice to 7 patients in the last 7 days, spending on the average 35 minutes each and not be paid for it. I think custom through the years has much to do with it. Again the fee question may be answered in the same way. When I came up here, amalgams 50c, extraction 25c, no charge if you put in a plate, gold foil \$1.00. I got those prices up to a half decent place when a shyster came in and worked for about what the patient cared to give him. And here

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salivary flow, for only in the degree that it is copious, fluid and alkaline does saliva best serve as natural mouth wash and protective fluid.

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I want to say you have to take the other fellow's fee into consideration in the smaller town in spite of what the theorists say on the subject.

Darn it I have gotten wound up and given you more to read than you will want, however the big idea in my mind is that we should have more standardization of fees than we have, and they should be on the up instead of down. I recognize the fact that a great many cannot pay higher fees but we should be able to work out some plan whereby they are taken care of even if we have to stump the

country and make the government take a hand in it.

If you think poorly of this, ditch it and I will be happy.

Yours respectfully,

EDITOR.—We think well of it and hope others will express their views. If several dentists situated as the writer of this letter is will give us their records and conclusions after a trial we will be glad to publish them. How many dentists recognize that a dollar nowadays buys only fifty cents worth of ten years ago.

Falling Revenues

The Dominion Dental Journal:

Dear Sir:

Relative to a lack of matriculants entering upon the study of dentistry, on the supposed account of the high standard required, a press report of Oct. 15th ult. from Montreal intimates that Dr. Wallace Secombe appealed to those present at the clinic of the Dental Club of that city, to interest themselves in prospective pupils in the Dental Colleges.

The speaker had forgotten for the moment the thousands of struggling practitioners who are giving wonderful faithful and skilled services.

In twenty-five years it has never come to me from any conversation with members of the dental profession that a standard could be too high. But many many times have I heard the bitter comment that too many students were being graduated, till the situation has become unbearable. So that far from it being an academic question, in view of the fact of much unemployment it is a simple economic question and will not be

changed except through cajolery or deceit, until a more equitable balance is maintained.

It is a notorious fact that the rank and file of dentists throughout the province are not making much if any more than a plasterer or a bricklayer; that the banks are cognizant of that fact and do not extend credit to dentists except in a very limited way; that in the final analyses the great public are compelled to meet the highest and often exorbitant fees, to enable the present great number of dentists to exist at all; that so panicky are many members of the profession that they are willing to pay over \$200.00 each to some American efficiency expert to give them pointers, or administer a good kick, in order to drive them to increase their earnings.

The amount so spent by those in the environs of Toronto amounted to something like \$10,000 this year for a work that should be sponsored by the Societies. But in making these extended comments it must be distinctly understood there is only great

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and
Best Wishes for
the Coming Year



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concern for the welfare of my confreres; that some one must go out of his path to insist that the pacific intentions and good will toward any governing body is only so maintained when there is no danger to self preservation.

So that while not suggesting any remedy for a falling revenue, it is apparent to the practising body that

any concern shown by the teaching body, is so expressed, largely on the score of lack of revenue and not from any higher sense of duty, any greater idealism, any nobler service rendered by them, over the rank and file of high minded dentists and good citizens of our province.

Wallace A. Maclaren.

BOOK REVIEW

Harelip and Cleft Palate

By MATTHEW N. FEDERSPIEL, B.Sc. D.D.S., M.D., F.A.C.S., F.A.C.D., PROFESSOR OF SURGERY, MARQUETTE UNIVERSITY. PUBLISHERS, THE C. V. MOSBY COMPANY, ST. LOUIS, 1927.

Like the majority of Mosby Books, this is intended to fill a demand within the compass of two hundred pages. It covers the subject of the title and then quits. History, etiology, development, anatomy, physiology, types, surgical and non-surgical treatment and reported cases.

It would seem that there are more cleft palates among some people than others. Hence, the greater demand for this kind of service. Very few

dentists have call for providing such service because it is mostly treated surgically and not done by general dentists, likewise the mechanical treatment falls into the hands of the few.

There is no other book that we know of which treats so completely of the subject and nothing else. The prosthetic section is well done and should appeal to any dentist who undertakes such work.

A DENTAL MECHANIC, an expert all round man, familiar with porcelain work and removable bridge work required in Calgary, Alberta. Reply, stating experience and salary expected, to Box 56, Dental Journal, 73 Richmond W., Toronto.

FOR SALE—Dental office in good western town, doing about \$4,000 cash yearly. Equipment nearly all new. Will sell cheap. For terms apply to Box 62, Dominion Dental Journal, 73 Richmond W., Toronto.

EXCELLENT LOCATION down town Toronto, most desirable section, to share Dental Suite, specialist in Orthodontia or Pyorrhoea preferred. Well equipped modern office, reasonable rental. Apply Box 66, Dominion Dental Journal, 73 Richmond W., Toronto.

FOR SALE—Dental Practice for sale, well established in Winnipeg. Large country connection. Good office in first-class office building. Box 67, Dental Journal, 73 Richmond W., Toronto.

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OBITUARY



Col. John Alexander Armstrong

Col. John Alexander Armstrong

Colonel John Alexander Armstrong, C.B.E., C.M.G., who organized the Canadian Army Dental Corps in 1915 and took it overseas, and one of the best known surgeon-dentists in Canada, died recently in the Civic Hospital, Ottawa, after an illness of two months. Death was due to heart disease.

Colonel Armstrong has not been in good health for the last two years and a half and had retired from active practice. He was a very genial person, possessing a charming personality. His death came as a shock to a host of friends in Ottawa.

Born 65 years ago, he was a son of Thomas Armstrong and Jane Beaty. He received his education at the Lisgar Collegiate Institute, the Royal College of Dental Surgeons and the

University of Toronto. He was a captain in the old 43rd Duke of Cornwall's Own Regiment.

For years, he took a keen interest in school affairs and for 10 years was a member of the Ottawa Public School Board, of which he was at one time chairman. During the Great War, he organized the Army Dental Corps, took charge of it overseas and served as director of Dental Services of the overseas military forces of Canada from 1915 to 1919.

Col. Armstrong was prominent in athletics, being a member of several athletic, rowing and football clubs. He was chairman of the 43rd Rifle Association from 1907-14. Col. Armstrong was a member of the Laurentian, Wellington and Canadian Clubs. His wife, formerly Ida G. Spittall, died in 1904. One son, living in Montreal, survives.



Dr. Albert W. Winnett

We gladly print the following extract from the Kingston Whig which indicates the esteem in which the late Dr. Winnett was held, would that as much could be said of all of us.

Dr. Albert W. Winnett

By the sudden passing of Dr. Albert W. Winnett, Kingston has lost one of its ablest dental surgeons—a member of a profession which to-day is very much in the limelight in regard to saving lives by extracting teeth which not so very long ago would be retained with their hidden poisons and undermining one's health. Dr. Winnett believed in always being a student, and hence he kept in close touch with all the development in dental science, being a regular attendant at all large conventions of the profession where the latest discoveries and treatments were discussed. He was probably the first dental surgeon in Kingston to install an X-ray machine for his

own work. He was a skilled operator and was satisfied with nothing but the best of work. Kingston knew him for more than twenty-five years, for it was here that he settled in his early years and he very soon built up a large practice. He served his country overseas during the Great War, and his wide experience with dental cases of the most terrible kind added immensely to his knowledge of the profession which he adorned. In civic, church, musical and fraternal causes he was a leader, giving freely of his time and his experience to further matters pertaining to the welfare of the community. Dr. Winnett served his day and generation faithfully and well, and leaves behind a memory that will long be cherished by those who knew him best.

Dr. Chalmers addressed the Niagara Falls Dental Society on modern Dental Surgery on November 20th, 1928.

Dr. Carlton Mills

After a lingering illness, the result of a nervous breakdown, Dr. Carlton Mills, former Bloor Street dentist, died at 84 Alpine Avenue on Thursday evening. Son of Mrs. and the late David Mills, formerly of Napanee and Petrolia, he was born at the latter place, educated in the public and high schools there and at Toronto University, graduating from the Royal College of Dental Surgeons in 1906. He was fond of amateur sports, baseball, golf and curling, and was a member of Lakeview Golf and Curling Clubs. He was a member of St. Paul's Anglican Church, and is survived by his mother.

Dr. James Woods, Sarnia

Sarnia, Oct. 30—Dr. James Woods, aged 82, formerly a practising dentist here and for 18 years treasurer of the city, died. Dr. Woods was a bachelor and came here from Toronto. He is said to have been the first dentist to receive a diploma in the Province of Ontario. He was a past master of Victoria Lodge, A.F. & A.M.; a past principal of Wawanosh chapter, R.A.M., and for many years was the representative of New Brunswick on the Grand Lodge of the R.A.M.

A memorial window was unveiled in Westmoreland Church, Toronto, in



Dr. James Woods

Carlton Mills

memory of the late Mrs. Jas. Conboy, mother of Dr. F. J. Conboy.

The report of the school dental officer of Windsor says that 25% of the pupils need no dental treatments this year, as compared with 21% last year. The years 25-26 were better than this year. The auxiliary schools show the highest percentage of perfect teeth.

A very important French Laboratory for dental products having an indispensable specialty in the profession very much in vogue and in great demand, would interest serious and active dentist, undertaking to represent and launch this specialty in Canada. Extremely interesting business. Write—

CHARLES LIMET - 15 Rue Vivienne, Paris, France

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